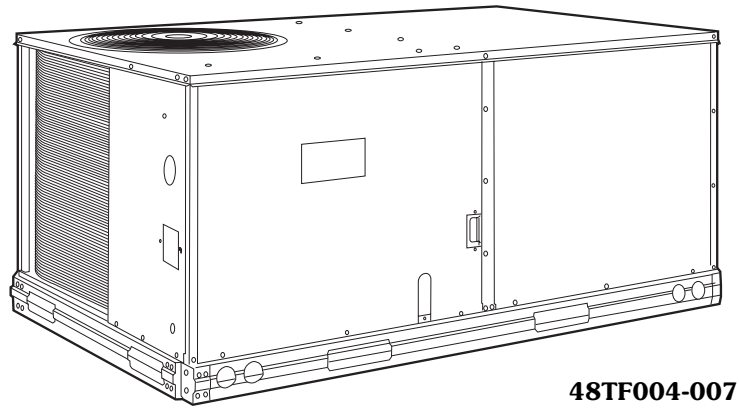
Product Data

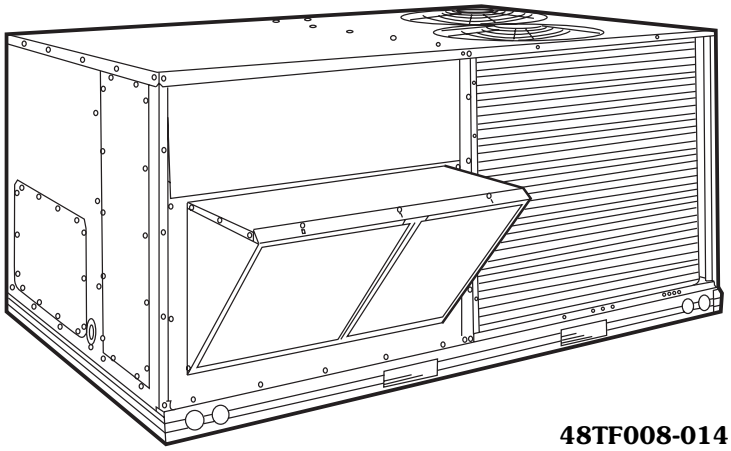
48TF004-014
Single-Package Rooftop Units
Gas Heating/Electric Cooling

3 to 12½ Nominal Tons

Carrier Comfort System PremierLink



48TF004-007



48TF008-014

Standard-Efficiency Rooftop Units with:

- Exclusive integrated gas control board with diagnostics
- Alumagard™ heat exchanger coating
- Induced-draft fan for gas combustion
- Tubular, dimpled heat exchangers
- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Convertible design for vertical or horizontal supply/return
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high-static drives that provide additional performance range

Features/Benefits

Every compact one-piece unit arrives fully assembled, charged, tested, and ready to run.

Integrated gas controller (IGC)

All ignition components are contained in the compact IGC which is easily accessible for servicing. The IGC control board, designed and manufactured exclusively for Carrier rooftop units, provides built-in diagnostic capability. An LED (light-emitting diode) simplifies troubleshooting by providing visual fault notification and system status confirmation.

The IGC also contains an exclusive anti-cycle protection for gas heat operation. After 4 continuous cycles on the unit high-temperature limit switch, the gas heat operation is disabled, and an

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error code is issued. This feature greatly improves reliability of the rooftop unit.

The IGC also contains burner control logic for accurate and dependable gas ignition. The LED is visible without removing the unit control box access panel. This LED fault-notification system reduces service person troubleshooting time and minimizes service costs. The IGC also maximizes heating efficiency by controlling evaporator-fan on and off delays.

Quiet, efficient operation and dependable performance

Compressors have vibration isolators for quiet operation. Efficient fan and motor design permits operation at low sound levels and all 48TF004-014 units are mounted either on mounting plate (004-007) or on an exclusive polycore plate (008-014).

The 48TF008-014 units offer lower utility costs through part-load operation using 2 stages of cooling.

Quiet and efficient operation is provided by belt-driven evaporator fans (standard on all units over 5 tons). The belt-driven evaporator-fan is equipped with variable-pitch pulleys which allow adjustment within the rpm ranges of the factory-supplied pulleys.

Increased operating efficiency is achieved through computer-designed coils featuring staggered internally enhanced copper tubes. Fins are ripple-edged for strength, lanced, and double waved for higher heat transfer.

Tubular, dimpled gas heat exchangers optimize heat transfer for improved efficiency. The tubular design permits hot gases to make multiple passes across the path of the supply air. The dimpled design creates a turbulent gas flow to maximize heating efficiency.

The California Air Quality Management Districts NO_x requirement of 40 nanograms/joule or less is met on 004-006 size Low NO_x models.

The extra thick Alumagard™ heat exchanger coating provides corrosion resistance and ensures long life.

The unsightly appearance of flue stacks is eliminated and the effects of wind on heating operations are diminished by the induced draft combustion system. The inducer fan draws hot combustion gas through the heat exchanger at the optimum rate for the most effective heat transfer. The heat exchanger operates under negative pressure, preventing flue gas leakage into the indoor supply air.

During the Heating mode, the evaporator-fan relay automatically starts the evaporator fan after the heat exchanger warms up to a suitable temperature. The 30-second fan delay prevents cold air from entering the supply duct system when the conditioned space is calling for heat to maximize efficiency.

The direct-spark ignition system saves operating expense when compared to pilot ignition systems. No crossover tube is required, therefore no sooting or pilot fouling problems can occur.

All 48TF standard units are designed for natural gas, but an accessory LP (liquid propane) conversion kit is available.

Safety is built in

All 48TF units have a flame rectification sensor to quickly sense the burner flame and ignite burners almost immediately. Fast shutdown is a certainty since the sensor reacts quickly to any flame outage or system failure. In the event of a shutdown, an error code is issued at the IGC board.

Safety is also assured due to the heating safety controls which will shut down the unit if there is a problem. If excessive temperatures develop, limit switches shut off the gas valve. After 4 continuous short cycles of the high-temperature limit switch, the IGC board locks out the gas heat cycle to prevent any further short cycles. This safety feature is provided exclusively on Carrier rooftop units. The rollout switch also deenergizes the gas valve in the event of a flame rollout.

Durable, dependable construction

Designed for durability in any climate, the weather-resistant cabinets are constructed of galvanized steel and bonderized, and all exterior panels are coated with a prepainted baked enamel finish. The paint finish is non-chalking, and is capable of withstanding ASTM B117 500-hour Salt Spray Test. All internal cabinet panels are primed, permitting longer life and a more attractive appearance for the entire unit.

In addition, all 48TF units are designed with a single, continuous top piece to eliminate any possible leaks. Totally enclosed condenser-fan motors and permanently lubricated bearings provide additional unit dependability.

Easy installation and conversion

All units are shipped in the vertical duct configuration for fit-up to standard roof curbs. (Two different curb sizes fit unit sizes 004-007 and 008-014, respectively.) The contractor can order and install the roof curb early in the construction stage, before decisions on size requirements are made.

All units feature roll-formed base rail design with forklift slots and rigging holes for easier maneuvering. (Forklift slots are found on 3 sides for 48TF004-014 units.) The standard 48TF004-006 units have operating weights under 500 lb and durable packaging protects all units during shipment and storage.

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Features/Benefits (cont)

The units can be easily converted from a vertical to a horizontal duct configuration by relocating the panels supplied with the unit.

The non-corrosive sloped condensate pan permits either an external horizontal side condensate drain (outside the roof curb) or an internal vertical bottom drain (inside the roof curb). Both options require an external, field-supplied P-trap.

The 48TF units were designed with service technicians in mind. The single-row condenser coils on the 48TF004 and 008 units simplify the cleaning process. The efficient in-shot burners and all ignition components are contained in an easily removable, compact assembly.

The 48TF004-014 units also have a standard filter access panel, which permits tool-less filter changes, even on units with horizontal economizers.

Simple electrical connections

Terminal boards, located in the base unit control box, facilitate connections to room thermostat, outdoor thermostat(s), and economizer. Service panels are quickly removed, permitting easy servicing.

Thru-the-bottom utility connection capability allow power, control wiring, and gas to be routed through unit base pan, minimizing roof penetrations. Gas, power, and control connections are made on the same side of the unit to simplify installation.

In addition, color-coded wires permit easy tracing and diagnostics.

Proven compressor reliability

Design techniques feature computer-programmed balance between compressor, condenser, and evaporator. Carrier-specified hermetic compressors are equipped with compressor overcurrent and overtemperature protection to ensure dependability.

All 48TF units have Carrier's exclusive Acutrol™ metering device which precisely controls refrigerant flow, preventing slugging and flood-back, while maintaining optimum unit performance. Refrigerant filter driers are standard.

Integrated economizers and outdoor air

Optional economizers and manual outdoor-air dampers introduce outdoor air which mixes with the conditioned air, improving indoor-air quality and often reducing energy consumption.

During a first stage call for cooling, if the outdoor-air temperature is below the economizer control changeover set point, the discharge-air sensor modulates the economizer outdoor-air damper open to take advantage of free cooling provided by the outside air. When second-stage cooling is called for, the compressor is energized in addition to the economizer. If the outdoor-air temperature is above the changeover set point, the first stage of compression is activated and the economizer stays at vent position. Durablade economizer operation is controlled by a dry-bulb thermostat that senses outdoor-air temperature.

Accessory upgrade kits allow for either outdoor air enthaply changeover or for more precise differential enthalpy control.

The Durablade economizer (option or accessory) on the 48TF004-014 units has a reliable sliding plate damper which is easily adjusted for 100% outdoor air, 100% return air, or any proportions of mixed air.

The 48TF004-014 units can also utilize the factory or field-installed EconoMi$er. The EconoMi$er is microprocessor controlled and incorporates a parallel, opposed-blade gear driven damper system. In addition, it has a spring return built into the damper actuator to provide reliable close-on-power-loss. The EconoMi$er comes equipped with up to 90% barometric relief capability for high outdoor airflow applications.

In addition, the EconoMi$er two-stage power exhaust accessory can be utilized to help maintain proper building pressure.

For units without economizer, year-round ventilation is enhanced by a manual outdoor-air damper (ordered as an accessory or an option). The damper can be preset to admit up to 50% outdoor air.

Carrier PremierLink™ controls add reliability, efficiency, and simplification

The PremierLink direct digital controls can be ordered as a factory-installed option or as a field-installed accessory. Designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operations, as well as monitor the following diagnostics and features: unit number, zone temperature, zone set point, zone humidity set point, discharge-air temperature, outdoor humidity level, filter status, fire shutdown status, IAQ set point, enthalpy status, differential enthalpy status, heat/cool lockout, CFM set point, pre-occupancy purge, economizer controls and early morning warm-up.

This controller has a 38.4K Baud communications capability and is compatible with *Comfort*Link™ controls, CCN and ComfortVIEW™ software. The Scrolling Marquee and Navigator are optional tools that can be used for programming and monitoring the unit for optimal performance. The addition of the Carrier CO_2 sensor in the conditioned space provides ASHRAE 62-99 compliance and Demand Control Ventilation.

The PremierLink peer-to-peer, Internet-ready communicating control is designed specifically for Constant Volume and Variable Volume and Temperature applications. This comprehensive controls system allows all Carrier 3 to 25 ton rooftops to be daisy chained together on a roof to create a fully functional HVAC (heating, ventilation and air conditioning) automation system.

Carrier Apollo controls

The Apollo communicating controls are factory-installed into the rooftop unit control box, and come equipped with built-in diagnostic capabilities. Light-emitting diodes (LEDs) simplify troubleshooting by indicating thermostat commands for both stages of heating and cooling, evaporator fan operation, and economizer operation. The Apollo communicating controls are designed to work specifically with the Carrier TEMP and VVT® (variable volume and temperature) thermostats. The Apollo controls allow the use of an IAQ (Indoor-Air Quality) sensor. The Apollo controls, combined with Carrier thermostats, incorporate a 5-minute recycle delay timer between modes of operation to prevent short cycling.

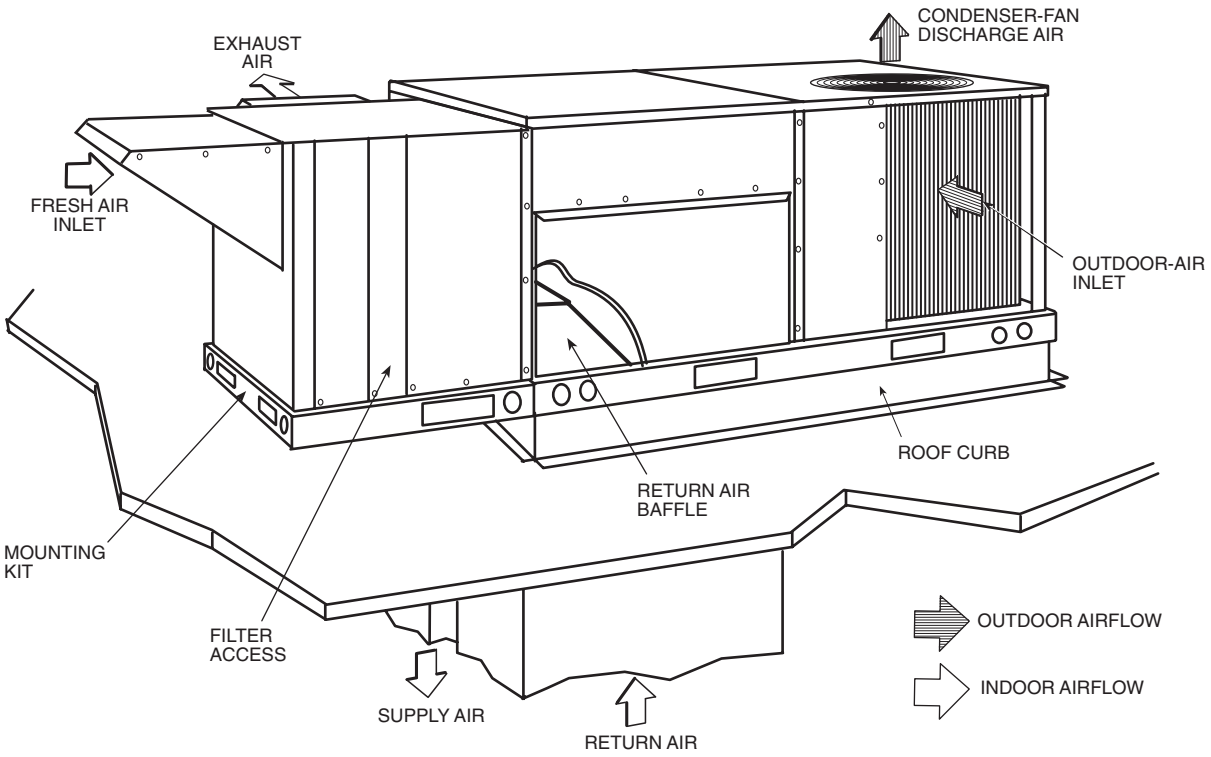
Indoor-air quality begins with Carrier rooftops

Sloped condensate pans minimize biological growth in rooftop units in accordance with ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) Standard 62. Two-inch filters with optional dirty filter indicator switch provide for greater particle reduction in the return air. The face-split evaporator coils improve the dehumidification capability of standard units, maximize building humidity control.

Optional proportional reacting CO_2 sensor is available with the EconoMi$er to aid the IAQ benefits.

Features/Benefits (cont)

UNIT WITH ENERGY$RECYCLER



Energy$Recycler — the IAQ solution for today's "tight" buildings

Indoor-air quality (IAQ) generally refers to the level of pollutants inside a building. These pollutants include cigarette smoke, carbon dioxide exhaled by occupants, radon gas, car exhaust, paint fumes, and odors.

Concern over increased indoor air pollutants has been spurred by several issues: 1) changes in new building construction methods and retrofit of older buildings have reduced air infiltration rates; 2) Synthetic materials release airborne particles, odors, and chemicals; and 3) HVAC systems that bring in minimal fresh air.

Indoor-air quality concerns caused ASHRAE to recommend increased ventilation for all public buildings. Simply introducing fresh air into a building, however, is not always practical or cost effective. Additional ventilation can overload HVAC systems and increase energy costs.

Carrier's 62AQ Energy$Recycler unit solves this dilemma by providing increased fresh air while keeping increased costs to a minimum. In addition, the Energy$Recycler helps reduce humidity levels, which helps to prevent deterioration of building materials and retards the growth of mold and mildew.

The 62AQ Energy$Recycler unit provides the best solution to retaining the energy-conserving benefits of today's tighter building construction while improving indoor-air quality.

Model number nomenclature

48 TF E 004 Z — — 5 0 1 DA

48 – Electric Cooling/ Gas Heat

TF – Constant Volume

Standard
D – Low Heat
E – Medium Heat/ High Heat
F – High Heat

California Compliant Low NOx
L – Low Heat (low NOx)
M – Medium Heat (low NOx)
N – High Heat (low NOx)

3 Phase
G – Low Heat Single Stage (3 phase)
H – Medium Heat Single Stage (3 phase)
K – High Heat Single Stage (3 phase)

Nominal Capacity
004 – 3 Tons
005 – 4 Tons
006 – 5 Tons
007 – 6 Tons
008 – 7 1/2 Tons
009 – 8 1/2 Tons
012 – 10 Tons
014 – 12 1/2 Tons

Factory-Installed Communicating Controls
– – Standard. No Hinged Access Panels
P – Carrier PremierLink™ Rooftop Controller
K – Novar ETM2024 Control
N – Novar ETM3051 Control
Z – Apollo Control
For more information about the Novar Control option, check with your sales representative.

Indoor Fan Motor
– – Standard Motor
A – Alternate Fan Motor
M – High-Static Motor**

Factory-Installed Option Code*

Packaging
1 – Domestic
3 – Export

Design Series
0 – Original

V-Ph-Hz
1 – 575-3-60
3 – 208/230-1-60†
5 – 208/230-3-60
6 – 460-3-60

Coil Fin Option
– – Al Evaporator, Al Condenser
B – Cu Evaporator, Cu Condenser
C – Al Evaporator, Cu Condenser
F – E-Coated Aluminum Condenser Fins Condenser Coil, Al Evaporator
V – Pre-coated Aluminum Condenser-Coil Fins

LEGEND
AL — Aluminum
CU — Copper
FIOP — Factory-Installed Option

*Refer to 48TF Price Pages for 48TF FIOP code table or contact your local representative for more details.
†Single phase is only available on 5-ton and smaller units.
**High-static motors are not available for single-phase units and size 014 units.

Quality Assurance

Certification No FM 22838

Approvals:
ISO 9001
EN 29002
BS5750 PART 2
ANSI/ASQC Q92

ARI* capacity ratings

UNIT 48TF	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†		SOUND RATING (Bels)
					Belt Drive	Direct Drive	
004	3	1200	35,000	4.0	10.0	9.7	8.1
005	4	1600	47,000	5.5	10.0	9.7	8.1
006	5	2000	57,000	6.7	10.0	9.7	8.1

See Legend and Notes on page 6.

ARI* capacity ratings (cont)

UNIT 48TF	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITY (Btuh)	TOTAL kW	EER	SOUND RATING (Bels)	IPLV
007	6	2100	72,000	8.0	9.0	8.1	**
008	7 1/2	2800	85,000	9.6	8.9	8.7	9.40
009	8 1/2	3000	98,000	11.0	9.0	8.7	9.00
012	10	4000	117,000	13.0	9.0	8.8	9.40
014	12 1/2	4500	144,000	16.1	9.0	8.7	9.20

LEGEND

Bels — Sound Levels (1 bel = 10 decibels)
db — Dry Bulb
EER — Energy Efficiency Ratio
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb

*Air Conditioning and Refrigeration Institute.
†Applies only to units with capacity of 65,000 Btuh or less.
**The IPLV applies only to two-stage cooling units.

NOTES:
1. Rated in accordance with ARI Standards 210/240, latest revision (for sizes 004-012) or 360, latest revision (for size 014) and 270, latest revision.
2. ARI ratings are net values, reflecting the effects of circulating fan heat.
3. Ratings are based on:

Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.
IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

HEATING CAPACITIES AND EFFICIENCIES

UNIT 48TF	HEATING INPUT (Btuh) Stage 2/Stage 1	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	AFUE (%)	STEADY-STATE EFFICIENCY (%)
E004	—/ 72,000	59,200	25-55	80.0	80.0
F004*	115,000/ 82,000	92,000	55-85	80.0	80.0
M004	—/ 60,000	49,000	20-50	80.0	80.0
N004	—/ 90,000	73,000	30-60	80.0	80.0
D005	—/ 72,000	59,200	25-55	80.0	80.0
E005	—/115,000	92,000	35-65	80.0	80.0
F005*	150,000/120,000	120,000	50-80	80.0	80.0
L005	—/ 60,000	49,000	20-50	80.0	80.0
M005	—/ 90,000	73,000	30-60	80.0	80.0
N005	—/120,000	98,000	40-70	80.0	80.0
D006	—/ 72,000	59,200	25-55	80.0	80.0
E006	—/115,000	92,000	35-65	80.0	80.0
F006*	150,000/120,000	120,000	50-80	80.0	80.0
L006	—/ 60,000	49,000	20-50	80.0	80.0
M006	—/ 90,000	73,000	30-60	80.0	80.0
N006	—/120,000	98,000	40-70	80.0	80.0
D007	—/ 72,000	59,200	25-55	80.0	80.0
E007	—/115,000	92,000	35-65	80.0	80.0
F007	150,000/120,000	120,000	50-80	80.0	80.0
D008	—/125,000	100,000	20-50	80.0	80.0
E008	180,000/120,000	144,000	35-65	80.0	80.0
F008	224,000/180,000	179,200	45-75	80.0	80.0
D009	—/125,000	100,000	20-50	80.0	80.0
E009	180,000/120,000	144,000	35-65	80.0	80.0
F009	224,000/180,000	179,200	45-75	80.0	80.0
D012	180,000/120,000	144,000	35-65	80.0	80.0
E012	224,000/180,000	179,200	35-65	80.0	80.0
F012	250,000/200,000	200,000	40-70	80.0	80.0
D014	224,000/180,000	179,200	35-65	80.0	80.0
E014	250,000/200,000	200,000	40-70	80.0	80.0

LEGEND

AFUE — Annual Fuel Utilization Efficiency

*Single-phase units have a single-stage gas valve. The heating input values are as follows:
48TFF004, 115,000 Btuh
48TFF005, 150,000 Btuh
48TFF006, 150,000 Btuh.

NOTE: NOx levels are 40 nanograms/joule with the accessory NOx reduction kit (sizes 004-006).

Physical data — 48TF004-007

UNIT SIZE 48TF		E/F/M/N004	D/E/F/L/M/N005	D/E/F/L/M/N006	D/E/F007
NOMINAL CAPACITY (tons)		3	4	5	6
OPERATING WEIGHT (lb)					
Unit					
Al/Al*		460	470	490	565
Al/Cu*		465	476	497	576
Cu/Cu*		468	482	505	587
Economizer					
Durablade		34	34	34	34
EconoMi$er		47	47	47	47
Roof Curb†		115	115	115	115
COMPRESSOR		Reciprocating			Scroll
Quantity		1	1	1	1
No. Cylinders (per Circuit)		2	2	2	2
Oil (oz)		50	50	50	54
REFRIGERANT TYPE		R-22			
Expansion Device		Acutrol™ Metering Device			
Operating Charge (lb-oz)					
Circuit 1		4-4	6-6	6-14	9-0
Circuit 2		—	—	—	—
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins			
Rows...Fins/in.		1...17	2...17	2...17	2...17
Total Face Area (sq ft)		8.36	8.36	10.42	10.42
CONDENSER FAN		Propeller Type			
Nominal Cfm		3500	4000	4000	4000
Quantity...Diameter (in.)		1...22.0	1...22.0	1...22.0	1...22.0
Motor Hp...Rpm		1/4...1100	1/4...1100	1/4...1100	1/4...1100
Watts Input (Total)		325	325	325	325
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins			
Rows...Fins/in.		2...15	2...15	3...15	4...15
Total Face Area (sq ft)		4.17	5.5	5.5	5.5
EVAPORATOR FAN		Centrifugal Type			
Quantity...Size (in.)	**Std**	1...10 x 10	1...10 x 10	1...11 x 10	1...10 x 10
	Alt	1...10 x 10	1...10 x 10	1...10 x 10	—
	High-Static	1...10 x 10	1...10 x 10	1...10 x 10	1...10 x 10
Type Drive	**Std**	Direct	Direct	Direct	Belt
	Alt	Belt	Belt	Belt	—
	High-Static	Belt	Belt	Belt	Belt
Nominal Cfm		1200	1600	2000	2400
Maximum Continuous Bhp	**Std**	.34	.75	1.20	2.40
	Alt	1.00	1.00	1.30/2.40**	—
	High-Static	2.40	2.40	2.90	2.90
Motor Frame Size	**Std**	48	48	48	56
	Alt	48	48	56	—
	High-Static	56	56	56	56
Nominal Rpm High/Low	**Std**	860/800	1075/970	1075/970	—
	Alt	1620	1620	1725	—
	High-Static	1725	1725	1725	1725
Fan Rpm Range	**Std**	—	—	—	1070-1460
	Alt	760-1000	835-1185	900-1300	—
	High-Static	1075-1455	1075-1455	1300-1685	1300-1685
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)	**Std**	—	—	—	2.8/3.8
	Alt	1.9/2.9	1.9/2.9	2.4/3.4	—
	High-Static	2.8/3.8	2.8/3.8	3.4/4.4	3.4/4.4
Nominal Motor Shaft Diameter (in.)	**Std**	1/2	1/2	1/2	5/8
	Alt	1/2	1/2	5/8	—
	High-Static	5/8	5/8	7/8	7/8
Fan Pulley Pitch Diameter (in.)	**Std**	—	—	—	4.5
	Alt	4.5	4.0	4.5	—
	High-Static	4.5	4.5	4.5	4.5
Belt, Quantity...Type...Length (in.)	**Std**	—	—	—	1...A...40
	Alt	1...A...34	1...A...34	1...A...39	—
	High-Static	1...A...39	1...A...39	1...A...40	1...A...40
Pulley Center Line Distance (in.)	**Std**	—	—	—	14.7-15.5
	Alt	10.0-12.4	10.0-12.4	14.7-15.5	—
	High-Static	10.0-12.4	10.0-12.4	14.7-15.5	14.7-15.5
Speed Change per Full Turn of Movable Pulley Flange (rpm)	**Std**	—	—	—	80
	Alt	48	70	80	—
	High-Static	65	65	60	60
Movable Pulley Maximum Full Turns From Closed Position	**Std**	—	—	—	5
	Alt	5	5	5	—
	High-Static	6	6	5	5
Factory Setting	**Std**	—	—	—	3
	Alt	3	3	3	—
	High-Static	3 1/2	3 1/2	3 1/2	3 1/2
Factory Speed Setting (rpm)	**Std**	—	—	—	1225
	Alt	856	975	1060	—
	High-Static	1233	1233	1396	1396
Fan Shaft Diameter at Pulley (in.)		5/8	5/8	5/8	5/8

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
Cu — Copper

*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
**Single phase/three-phase.
††Rollout switch lockout is manually reset by interrupting power to unit or resetting thermostat.
‖Three-phase standard high heat models have heating input values as shown. Single-phase standard high heat models have one-stage heating with heating input values as follows:
48TFF004, 115,000 Btuh
48TFF005, 150,000 Btuh
48TFF006, 150,000 Btuh
***California SCAQMD compliant Low NO_x models have combustion products that are controlled to 40 nanograms per joule or less.

NOTE: High-static motor not available on single-phase units.

Physical data — 48TF004-007 (cont)

UNIT SIZE 48TF			E/F/M/N004	D/E/F/L/M/N005	D/E/F/L/M/N006	D/E/F007
FURNACE SECTION						
Rollout Switch Cutout Temp (F)††			195	195	195	195
Burner Orifice Diameter (in. ...drill size)						
Natural Gas	Std	TFD	—	.113...33	.113...33	.113...33
		TFE	.113...33	.113...33	.113...33	.113...33
		TFF	.113...33	.129...30	.129...30	.129...30
		TFL	—	.102...38	.102...38	—
		TFM	.102...38	.102...38	.102...38	—
		TFN	.102...38	.116...32	.116...32	—
Liquid Propane	Alt	TFD	—	.089...43	.089...43	.089...43
		TFE	.089...43	.089...43	.089...43	.089...43
		TFF	.089...43	.102...38	.102...38	.102...38
		TFL	—	.082...45	.082...45	—
		TFM	.082...45	.082...45	.082...45	—
		TFN	.082...45	.089...43	.089...43	—
Thermostat Heat Anticipator Setting (amps)						
208/230 v and 575 Stage 1			.14	.14	.14	.14
Stage 2			.14	.14	.14	.14
460 v Stage 1			.14	.14	.14	.14
Stage 2			.14	.14	.14	.14
Gas Input (Btuh)‖ Stage 1		TFD	—	72,000	72,000	72,000
		TFE	72,000	115,000	115,000	115,000
		TFF	82,000	120,000	120,000	120,000
		TFL***	—	60,000	60,000	—
		TFM***	60,000	90,000	90,000	—
		TFN***	90,000	120,000	120,000	—
Stage 2 (3-phase units)		TFF	115,000	115,000	150,000	150,000
Efficiency (Steady State) (%)			80	80	80	80
Temperature Rise Range		TFD	—	25-55	25-55	25-55
		TFE	25-55	35-65	35-65	35-65
		TFF	55-85	50-80	50-80	50-80
		TFL	—	20-50	20-50	—
		TFM	20-50	30-60	30-60	—
		TFN	30-60	40-70	40-70	—
Manifold Pressure (in. wg)						
Natural Gas	Std		3.5	3.5	3.5	3.5
Liquid Propane	Alt		3.5	3.5	3.5	3.5
Gas Valve Quantity			1	1	1	1
Gas Valve Pressure Range						
Psig			0.180-0.487	0.180-0.487	0.180-0.487	0.180-0.487
in. wg			5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5
Field Gas Connection Size (in.)			1/2	1/2	1/2	1/2
HIGH-PRESSURE SWITCH (psig)						
Standard Compressor Internal Relief (Differential)				450 ± 50		500 ± 50
Cutout				428		428
Reset (Auto.)				320		320
LOW-PRESSURE SWITCH (psig)						
Cutout				7 ± 3		
Reset (Auto.)				22 ± 7		
FREEZE PROTECTION THERMOSTAT (F)						
Opens				30 ± 5		
Closes				45 ± 5		
OUTDOOR-AIR INLET SCREENS						
Quantity...Size (in.)				Cleanable 1...20 x 24 x 1		
RETURN-AIR FILTERS						
Quantity...Size (in.)				Throwaway 2...16 x 25 x 2		

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
Cu — Copper

*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
**Single phase/three-phase.
††Rollout switch lockout is manually reset by interrupting power to unit or resetting thermostat.
‖Three-phase standard high heat models have heating input values as shown. Single-phase standard high heat models have one-stage heating with heating input values as follows:
48TFF004, 115,000 Btuh
48TFF005, 150,000 Btuh
48TFF006, 150,000 Btuh
***California SCAQMD compliant Low NO_x models have combustion products that are controlled to 40 nanograms per joule or less.

NOTE: High-static motor not available on single-phase units.

Physical data — 48TF008-014

UNIT SIZE 48TF		D/E/F008	D/E/F009	D/E/F012	D/E014
NOMINAL CAPACITY (tons)		7 1/2	8 1/2	10	12 1/2
OPERATING WEIGHT (lb)					
Unit					
Al/Al*		870	880	1035	1050
Al/Cu*		881	896	1057	1077
Cu/Cu*		893	907	1080	1100
Economizer					
Durablade		44	44	44	44
EconoMi$er		62	62	62	62
Roof Curb†		143	143	143	143
COMPRESSOR		Reciprocating	Reciprocating	Reciprocating	Scroll
Quantity		2	2	2	2
No. Cylinders (per Circuit)		2	2	2	2
Oil (oz)		42 ea	65 ea	54 ea	54 ea
REFRIGERANT TYPE		R-22			
Expansion Device		Acutrol™ Metering Device			
Operating Charge (lb-oz)					
Circuit 1		4-13	6-14	7- 3	8-10
Circuit 2		4-14	9- 2	7-13	8- 6
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins			
Rows...Fins/in.		1...17	2...17	2...17	2...17
Total Face Area (sq ft)		20.50	18.00	20.47	25.00
CONDENSER FAN		Propeller Type			
Nominal Cfm		6400	6400	7000	7000
Quantity...Diameter (in.)		2...22	2...22	2...22	2...22
Motor Hp...Rpm		1/4...1100	1/4...1100	1/4...1100	1/4...1100
Watts Input (Total)		600	600	600	600
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins			
Rows...Fins/in.		3...15	3...15	3...15	4...15
Total Face Area (sq ft)		8.0	8.0	10.0	11.1
EVAPORATOR FAN		Centrifugal Type			
Quantity...Size (in.)	**Std**	1...15 x 15	1...15 x 15	1...15 x 15	1...15 x 15
	Alt	1...15 x 15	—	1...15 x 15	1...15 x 15
	High-Static	1...15 x 15	1...15 x 15	1...15 x 15	—
Type Drive	**Std**	Belt	Belt	Belt	Belt
	Alt	Belt	—	Belt	Belt
	High-Static	Belt	—	Belt	—
Nominal Cfm		3000	3100	4000	5000
Maximum Continuous Bhp	**Std**	2.40	2.40	2.40	3.70
	Alt	2.40	—	2.90	5.25
	High-Static	3.70	3.70	5.25	—
Motor Frame Size	**Std**	56	56	56	56
	Alt	56	—	56	56
	High-Static	56	56	56	—
Nominal Rpm High/Low	**Std**	—	—	—	—
	Alt	—	—	—	—
	High-Static	1725	1725	1725	1725
Fan Rpm Range	**Std**	590-840	685-935	685-935	860-1080
	Alt	685-935	—	835-1085	900-1260
	High-Static	860-1080	860-1080	830-1130	—
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)	**Std**	2.4/3.4	2.8/3.8	2.8/3.8	4.0/5.0
	Alt	2.8/3.8	—	3.4/4.4	3.1/4.1
	High-Static	4.0/5.0	4.0/5.0	2.8/3.8	—
Nominal Motor Shaft Diameter (in.)	**Std**	5/8	5/8	5/8	7/8
	Alt	5/8	—	7/8	7/8
	High-Static	7/8	7/8	7/8	—
Fan Pulley Pitch Diameter (in.)	**Std**	7.0	7.0	7.0	8.0
	Alt	7.0	—	7.0	5.9
	High-Static	8.0	8.0	5.8	—
Belt, Quantity...Type...Length (in.)	**Std**	1...A...49	1...A...49	1...A...49	1...A...52
	Alt	1...A...49	—	1...A...49	1...BX...46
	High-Static	1...A...55	1...A...55	1...BX...46	—
Pulley Center Line Distance (in.)	**Std**	16.75-19.25	16.75-19.25	15.85-17.50	15.85-17.50
	Alt	16.75-19.25	—	15.85-17.50	15.85-17.50
	High-Static	16.75-19.25	16.75-19.25	15.85-17.50	—
Speed Change per Full Turn of Movable Pulley Flange (rpm)	**Std**	50	50	50	44
	Alt	50	—	50	50
	High-Static	60	60	60	—
Movable Pulley Maximum Full Turns From Closed Position	**Std**	5	5	5	5
	Alt	5	—	5	6
	High-Static	5	5	6	—
Factory Setting	**Std**	5	5	5	5
	Alt	5	—	5	5
	High-Static	5	5	5	—
Factory Speed Setting (rpm)	**Std**	590	685	685	860
	Alt	685	—	835	960
	High-Static	860	860	887	—
Fan Shaft Diameter at Pulley (in.)		1	1	1	1

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
Cu — Copper

*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
**Single phase/three-phase.
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48TFF004, 115,000 Btuh
48TFF005, 150,000 Btuh
48TFF006, 150,000 Btuh
***California SCAQMD compliant Low NO_x models have combustion products that are controlled to 40 nanograms per joule or less.

NOTE: High-static motor not available on single-phase units.

Physical data — 48TF008-014 (cont)

UNIT SIZE 48TF			D/E/F008	D/E/F009	D/E/F012	D/E014
FURNACE SECTION						
Rollout Switch Cutout Temp (F)††			195	195	195	195
Burner Orifice Diameter (in. ...drill size)						
Natural Gas	**Std**	**TFD**	.120...31	.120...31	.120...31	.120...31
		TFE	.120...31	.120...31	.120...31	.129...30
		TFF	.120...31	.120...31	.129...30	—
Liquid Propane	**Alt**	**TFD**	.096...41	.096...41	.096...41	.096...41
		TFE	.096...41	.096...41	.096...41	.102...38
		TFF	.096...41	.096...41	.102...38	—
Thermostat Heat Anticipator Setting (amps)						
208/230 v and 575 Stage 1			.14	.14	.14	.14
Stage 2			.20	.20	.20	.20
460 v Stage 1			.14	.14	.14	.14
Stage 2			.20	.20	.20	.20
Gas Input (Btuh) Stage 1		**TFD**	125,000	125,000	120,000	180,000
		TFE	120,000	120,000	180,000	200,000
		TFF	180,000	180,000	200,000	—
Stage 2		**TFD**	—	—	180,000	224,000
		TFE	180,000	180,000	224,000	250,000
		TFF	224,000	224,000	250,000	—
Efficiency (Steady State) (%)			80	80	80	80
Temperature Rise Range		**TFD**	20-50	20-50	35-65	35-65
		TFE	35-65	35-65	35-65	40-70
		TFF	45-75	45-75	40-70	—
Manifold Pressure (in. wg)						
Natural Gas	**Std**		3.5	3.5	3.5	3.5
Liquid Propane	**Alt**		3.5	3.5	3.5	3.5
Gas Valve Quantity			1	1	1	1
Gas Valve Pressure Range						
Psig			0.180-0.487	0.180-0.487	0.180-0.487	0.180-0.487
in. wg			5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5
Field Gas Connection Size (in.)			1/2/3/4/3/4	1/2/3/4/3/4	3/4/3/4/3/4	3/4/3/4
HIGH-PRESSURE SWITCH (psig)						
Standard Compressor				450 ± 50		500 ± 50
Internal Relief (Differential)						
Cutout				428		428
Reset (Auto.)				320		320
LOW-PRESSURE SWITCH (psig)				7 ± 3		
Cutout						
Reset (Auto.)				22 ± 7		
FREEZE PROTECTION THERMOSTAT (F)						
Opens				30 ± 5		
Closes				45 ± 5		
OUTDOOR-AIR INLET SCREENS				Cleanable		
Quantity...Size (in.)				1...20 x 24 x 1 1...16 x 25 x 1		
RETURN-AIR FILTERS				Throwaway		
Quantity...Size (in.)			4...16 x 20 x 2	4...16 x 20 x 2	4...20 x 20 x 2	4...20 x 20 x 2

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
Cu — Copper

*Evaporator coil fin material/condenser coil fin material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
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48TFF006, 150,000 Btuh
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NOTE: High-static motor not available on single-phase units.

Options and accessories

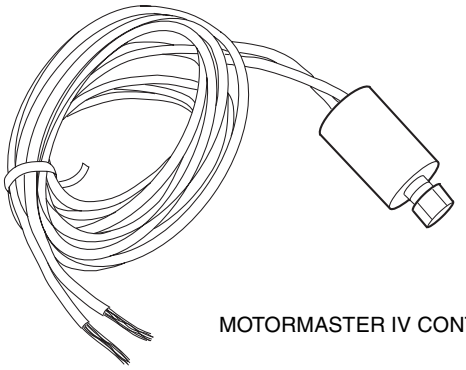
ITEM	OPTION*	ACCESSORY†
PremierLink™ Control	X	X
Apollo Direct Digital Communicating Controls	X	
High-Static Motor and Drive	X	
Energy$Recycler		X
EconoMi$er (Vertical only)	X	X
EconoMi$er with Power Exhaust (Vertical only)		X
Power Exhaust for EconoMi$er (Vertical/Horizontal)		X
EconoMi$er (Horizontal)		X
Durablade Integrated Economizer (Includes Hood)		X
Manual Outdoor-Air Damper		X
Condenser Coil Grille (004-007)		X
Alternate Drive (008)	X	
Alternate Motor and Drive (004-006,012,014)	X	
Unit-Mounted Non-Fused Disconnect	X	
LP (Liquid Propane) Conversion Kit		X
Electronic Programmable Thermostat		X
Light Commercial Thermidistat		X
25% Open Two-Position Damper		X
100% Open Two-Position Damper		X
Roof Curbs (Vertical and Horizontal Discharge)		X
Thermostats and Subbases		X
Motormaster® IV Head Pressure Control (Cycle Control)		X
Time Guard® II Control Circuit		X
Thru-the-Bottom Utility Connections		X
Condenser Coil Hail Guard Assembly		X
Flue Shield		X
Convenience Outlet	X	
Flue Discharge Deflector		X
Fan/Filter Status		X
Outdoor Air Enthalpy Sensor (EconoMi$er Only)		X
Return Air Enthalpy Sensor (EconoMi$er Only)		X
Return Air Temperature Sensor (EconoMi$er Only)		X
Indoor Air Quality (CO_2) Sensor (EconoMi$er Only)		X

*Factory-installed.
†Field-installed.

NOTE: Refer to 48TF price pages or contact your local representative for accessory/and option package information.

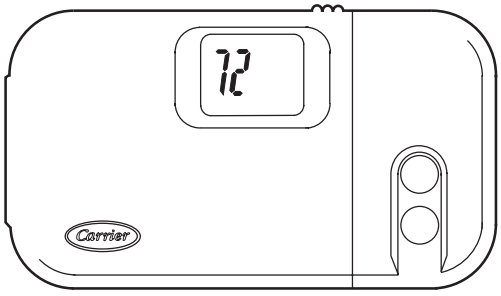
LOW AMBIENT CONTROLS

The 48TF004-014 standard units are designed to operate in cooling at outdoor temperatures down to 25 F. With accessory Motormaster IV control (condenser-fan cycling) units can operate at outdoor temperatures down to –20 F. The head pressure controls, which mount in the condenser section, control the condenser-fan motor to maintain correct condensing temperature.



MOTORMASTER IV CONTROL

CARRIER COMMERCIAL THERMOSTAT



Designed specifically for use with Carrier commercial systems, this Carrier programmable thermostat features LED occupied/unoccupied displays and setback mode which can override continuous fan operation.

LIGHT COMMERCIAL THERMIDISTAT

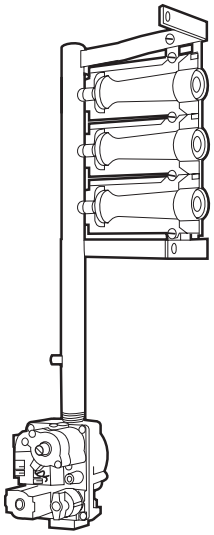
The Light Commercial Thermidistat combines temperature and humidity control in one device.

TIME GUARD II CONTROL

Time Guard II control automatically prevents compressor from restarting for at least 5 minutes after a shutdown. Accessory prevents short cycling of compressor if thermostat is changed rapidly. Time Guard II control mounts in the control compartment of unit.

Options and accessories (cont)

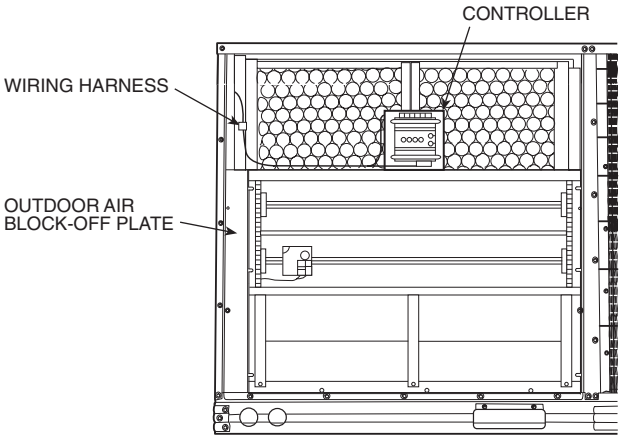
LIQUID PROPANE (LP) CONVERSION KITS



004-007 SHOWN

The LP conversion kit allows the unit to utilize a liquid propane fuel supply in areas where natural gas is unavailable, and permits the unit to be converted from natural gas to LP gas use. The kit contains the orifices required for LP operation.

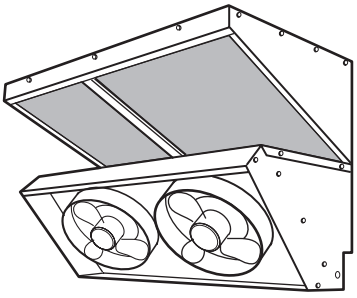
ECONOMI$ER



Factory-installed EconoMi$er utilizes a microprocessor-based control, gear drive damper system, low pressure drop characteristics, built-in spring return (for close upon power loss), and an integral barometric damper.

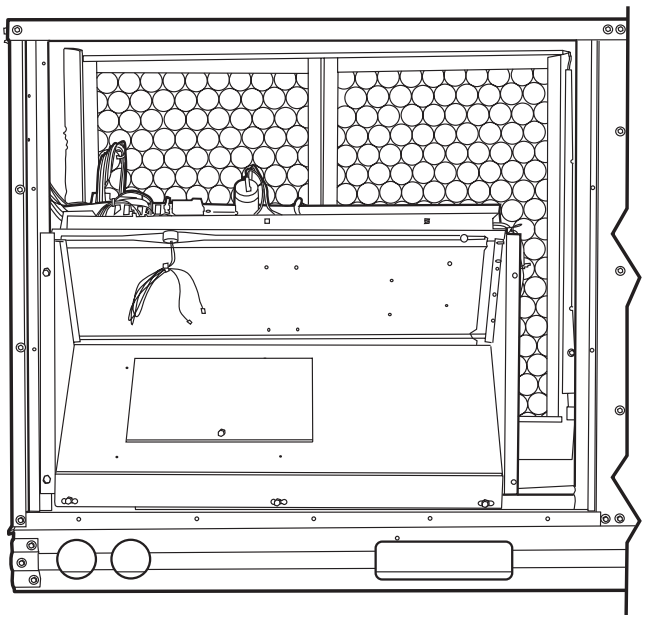
NOTE: EconoMi$er is available for vertical ductwork applications factory installed. A horizontal EconoMi$er is available for field installation.

POWER EXHAUST



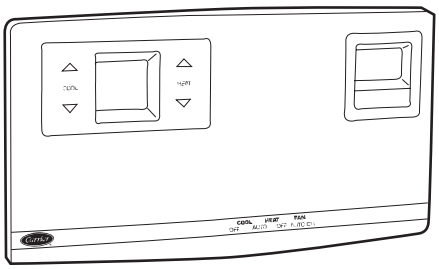
Power exhaust replaces the standard exhaust hood to reduce zone pressurization and increase fresh air circulation. The two-stage fan system is another easy-to-install way to optimize rooftop performance.

DURABLADE ECONOMIZER



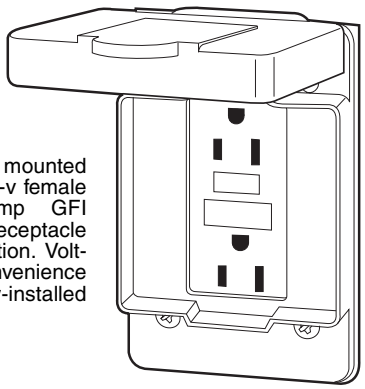
Exclusive Durablade economizer damper design saves energy while providing economical and reliable cooling. A sliding plate on the face of the economizer controls the amount of outdoor air entering the system. Closed, it provides a leakproof seal which prevents ambient air from seeping in or conditioned air from seeping out. It can be adjusted easily for 100% outdoor air or any proportions of mixed air. Like the base unit, the economizer is converted easily for horizontal discharge applications.

ELECTRONIC PROGRAMMABLE THERMOSTAT



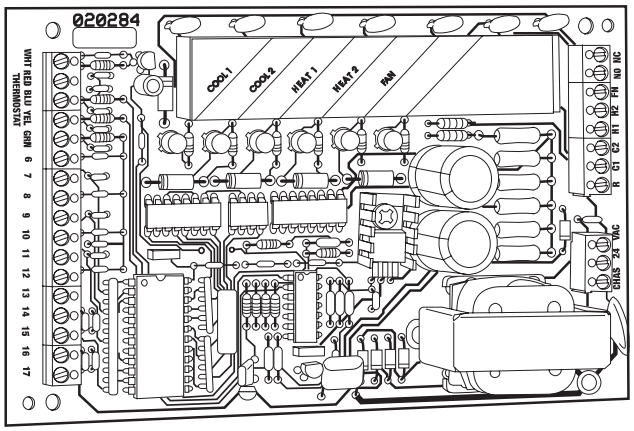
Carrier's electronic programmable thermostat provides efficient temperature control by allowing you to program heating and cooling setbacks and setups with provisions for weekends and holidays. Accessory remote sensing package is also available to provide tamperproof control in high traffic spaces. Used in conjunction with factory-installed Apollo control, this thermostat provides a 5-minute recycle timer between modes of operation for short-cycle protection.

CONVENIENCE OUTLET



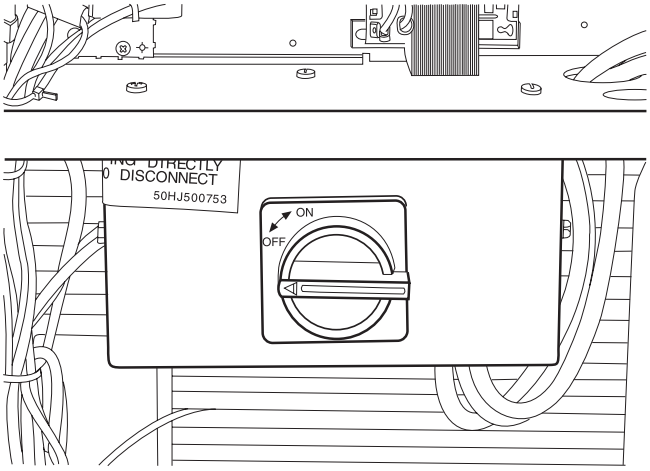
Factory-installed, internally mounted and externally accessible 115-v female receptacle. Includes 15-amp GFI (Ground Fault Interrupter) receptacle with independent fuse protection. Voltage required to operate convenience outlet is provided by a factory-installed transformer.

FACTORY-INSTALLED APOLLO COMMUNICATING CONTROLS



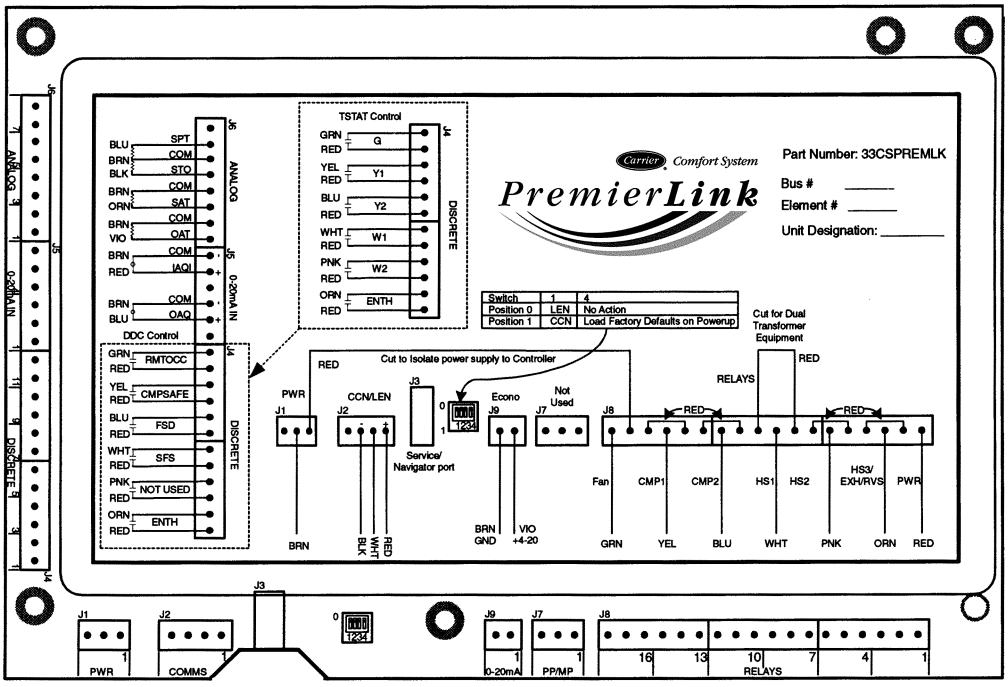
The Apollo direct digital controls are designed exclusively by Carrier, and are used to actively monitor and control all modes of operation as well as to monitor evaporator-fan status, filter status, supply-air temperature, outdoor-air temperature, indoor-air quality, and field-provided sensors. They are designed to work in conjunction with Carrier TEMP and VVT® (variable volume/variable temperature) system thermostats.

UNIT-MOUNTED DISCONNECT



Factory-installed, internally-mounted, NEC (National Electrical Code) and UL (Underwriters' Laboratories) approved non-fused switch provides unit power shutoff with disconnect lockout protection capability. The switch is accessible from outside the unit.

PREMIERLINK™ CONTROL



The PremierLink peer-to-peer, Internet ready communicating control is designed specifically for constant volume and variable volume and temperature applications. This comprehensive control system allows all Carrier 3 to 25 ton rooftops to be daisy-chained together on a roof to create a fully functional HVAC automation system.

Base unit dimensions — 48TF004-007

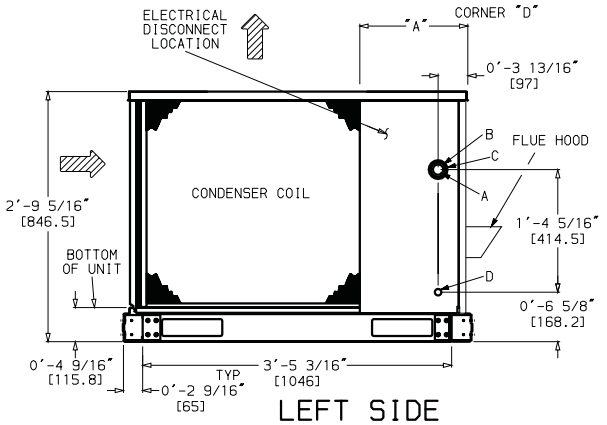
UNIT 48TF	STANDARD UNIT WEIGHT		DURABLADE ECONOMIZER WEIGHT		ECONOMI$ER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"A" PANEL LENGTH
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	
E/F/M/N004	460	209	34	15.4	47	21.3	140	63.5	105	47.6	159	72.1	56	25.4	1′-10 3/8″ [568.0]
D/E/F/L/ M/N005	470	213	34	15.4	47	21.3	142	64.4	106	48.1	162	73.5	60	27.2	1′-10 3/8″ [568.0]
D/E/F/L/ M/N006	490	222	34	15.4	47	21.3	150	68.0	115	52.2	160	72.6	65	29.5	1′-0 3/8″ [315.0]
D/E/F007	565	256	34	15.4	47	21.3	165	74.8	136	61.7	200	90.7	64	29.0	1′-0 3/8″ [315.0]

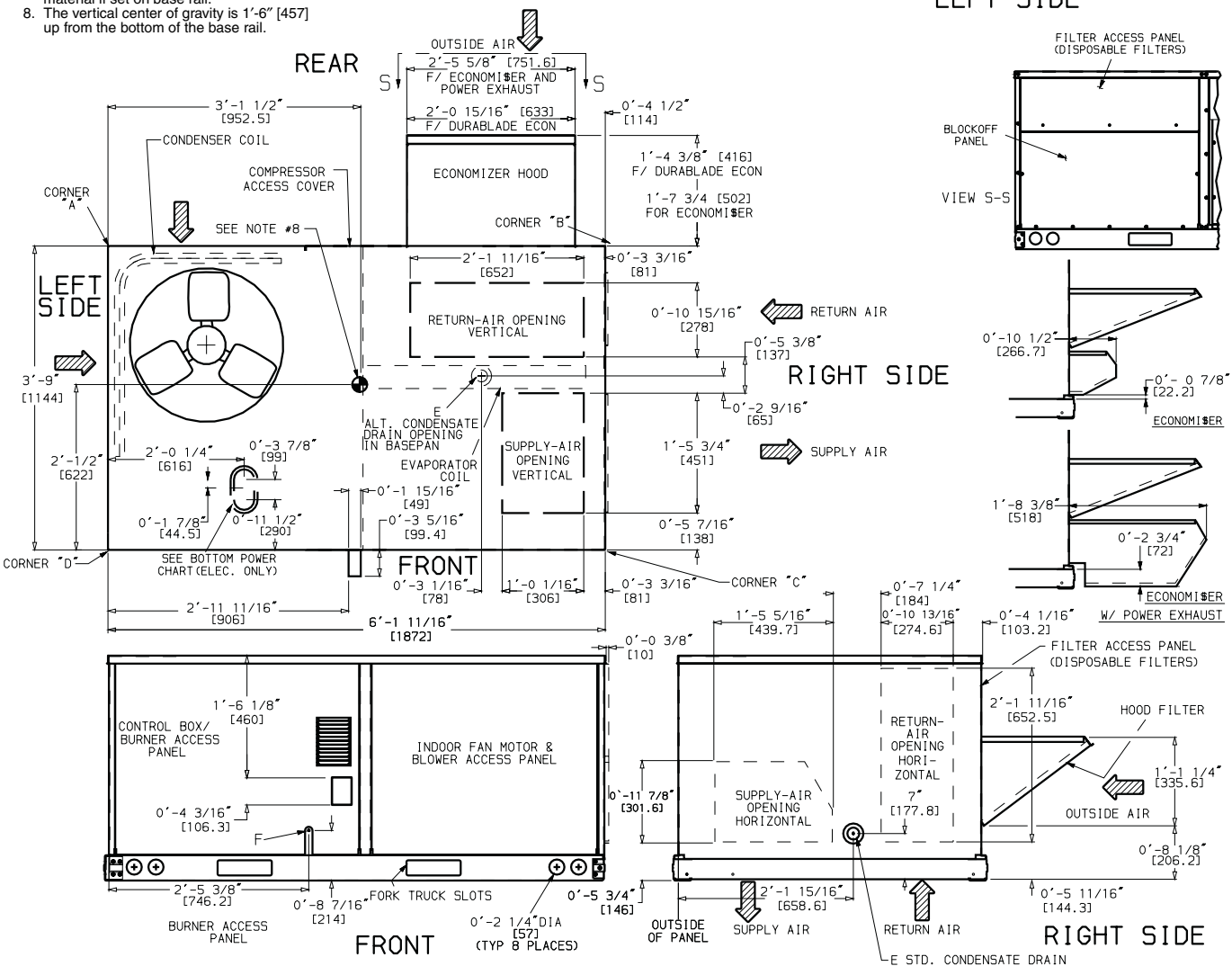
BOTTOM POWER CHART, THESE HOLES REQUIRED FOR USE WITH ACCESSORY PACKAGES — CRBTMPWR001A00 (POWER AND CONTROL), 3A00 (POWER, CONTROL, AND GAS)

THREADED CONDUIT SIZE	WIRE USE	REQURED HOLE SIZES (MAX.)
1/2″ 3/4″ 1/2″ FPT	24 V Power Gas	7/8″ [22.2] 1 1/8″ [28.4] 1 1/4″ [31.8]

	CONNECTION SIZES
A	1 3/8″ Dia [357] Field Power Supply Hole
B	2″ Dia. [51] Power Supply Knockout
C	2 1/2″ Dia. [64] Power Supply Knockout
D	7/8″ Dia. [22] Field Control Wiring Hole
E	3/4″-14 NPT Condensate Drain
F	1/2″-14 NPT Gas Connection

NOTES:
1. Dimensions in [ ] are in millimetero
2. Center of gravity.
3. Direction of airflow.
4. On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings, and all ductwork should be attached to the flanges.
5. Minimum clearance (local codes or jurisdiction may prevail):
   a. Between unit, flue side and combustible surfaces, 36 inches.
   b. Bottom of unit to combustible surfaces (when not using curb), 1 inch. Bottom of base rail to combustible surfaces (when not using curb) 0 inches.
   c. Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
   d. Overhead, 60 in. to assure proper condenser fan operation.
   e. Between units, control box side, 42 in. per NEC.
   f. Between unit and ungrounded surfaces, control box side, 36 in. per NEC.
   g. Between unit and block or concrete walls and other grounded surfaces, control box side, 42 in. per NEC.
   h. Horizontal supply and return end, 0 inches (when alternate condensate drain used).
6. With the exception of the clearance for the condenser coil and combustion side as stated in notes 5a, b and c, a removable fence or barricade requires no clearance.
7. Units may be installed on combustible floors made from wood or Class A, B, or C roof covering material if set on base rail.
8. The vertical center of gravity is 1′-6″ [457] up from the bottom of the base rail.





Base unit dimensions — 48TF008-014

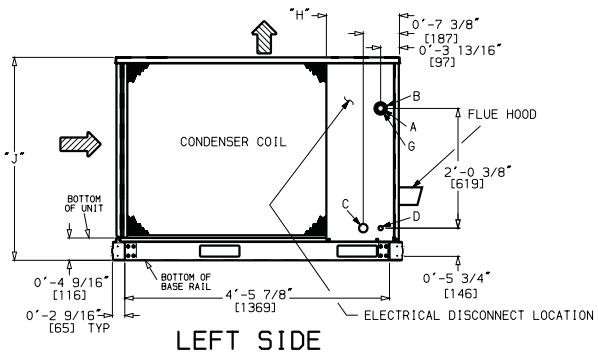
UNIT 48TF	STANDARD UNIT WEIGHT		DURABLADE ECONOMIZER WEIGHT		ECONOMISER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"		"L"	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	ft-in.	[mm]	ft-in.	[mm]	ft-in.	[mm]	ft-in.	[mm]
D/E/F008	870	395	44	20	62	28	189	86	161	73	239	109	280	127	1-2 7/8	[378]	3-5 5/16	[1050]	2-9 11/16	[856]	2- 2 7/16	[672]
D/E/F009	880	399	44	20	62	28	191	87	163	74	242	110	284	129	3-3 7/8	[1013]	3-5 5/16	[1050]	2-9 11/16	[856]	2- 2 7/16	[672]
D/E/F012	1035	469	44	20	62	28	225	102	192	87	285	129	333	151	2-5 7/8	[759]	4-1 5/16	[1253]	3-0 3/8	[924]	2-10 7/16	[875]
D/E014	1050	476	44	20	62	28	228	103	195	88	289	131	338	153	1-2 7/8	[378]	4-1 5/16	[1253]	3-0 3/8	[924]	2-10 7/16	[875]

NOTES:
1. Dimensions in [ ] are in millimeters.
2. Center of gravity.
3. Direction of airflow.
4. On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings, and all ductwork should be attached to the flanges.
5. Minimum clearance (local codes or jurisdiction may prevail):
   a. Between unit, flue side and combustible surfaces, 36 inches.
   b. Bottom of unit to combustible surfaces (when not using curb), 1 inch.
      Bottom of base rail to combustible surfaces (when not using curb) 0 inches.
   c. Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
   d. Overhead, 60 in. to assure proper condenser fan operation.
   e. Between units, control box side, 42 in. per NEC (National Electrical Code).
   f. Between unit and ungrounded surfaces, control box side, 36 in. per NEC.
   g. Between unit and block or concrete walls and other grounded surfaces, control box side, 42 in. per NEC.
   h. Horizontal supply and return end, 0 inches (when alternate condensate drain used).
6. With the exception of the clearance for the condenser coil and combustion side as stated in notes 5a, b and c, a removable fence or barricade requires no clearance.
7. Units may be installed on combustible floors made from wood or Class A, B, or C roof covering material if set on base rail.
8. The vertical center of gravity is 1′-7″ [483] for 008 and 009, 1′-11″ [584] for 012 and 014 up from the bottom of the base rail.

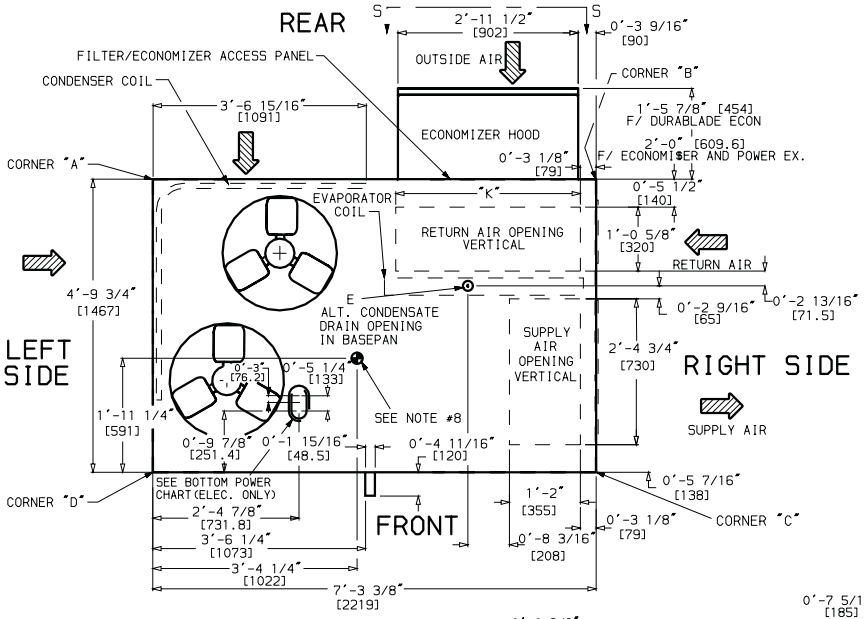
	CONNECTION SIZES
A	1 3/8″ Dia [35] Field Power Supply Hole
B	2 1/2″ Dia [64] Power Supply Knockout
C	1 3/4″ Dia [44] Charging Port Hole
D	7/8″ Dia [22] Field Control Wiring Hole
E	3/4″-14 NPT Condensate Drain
F	1/2″-14 NPT Gas Connection 48TFD008 & 009 3/4″–14 NPT Gas Connection 48TFE,F008 & 009, 48TFD,E012 & 014, 48TJF012
G	2″ Dia [51] Power Supply Knockout

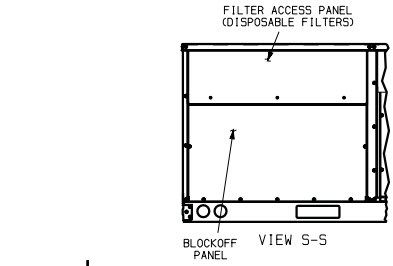
BOTTOM POWER CHART, THESE HOLES REQUIRED FOR USE WITH ACCESSORY PACKAGES — CRBTMPWR002A00 (POWER AND CONTROL) AND CRBTMPWR004A00 (POWER, CONTROL, AND GAS)

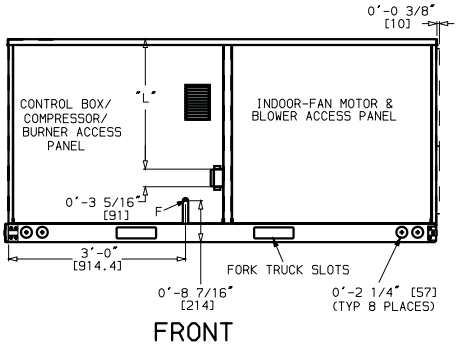
THREADED CONDUIT SIZE	WIRE USE	REQURED HOLE SIZES (MAX.)
1/2″ 1 1/4″ 3/4″ FPT	24 V Power Gas	7/8″ [22.2] 1 3/4″ [44.4] 1 5/8″ [41.3]

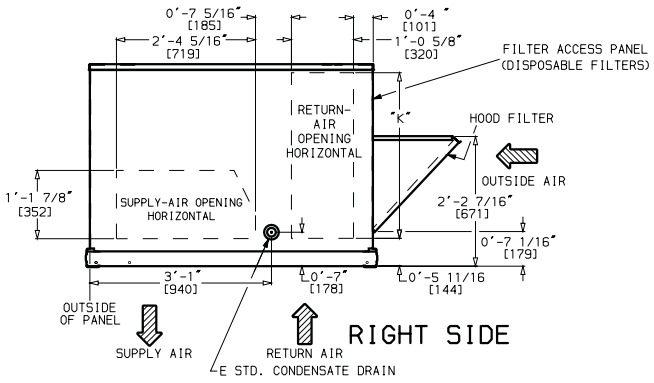


LEFT SIDE







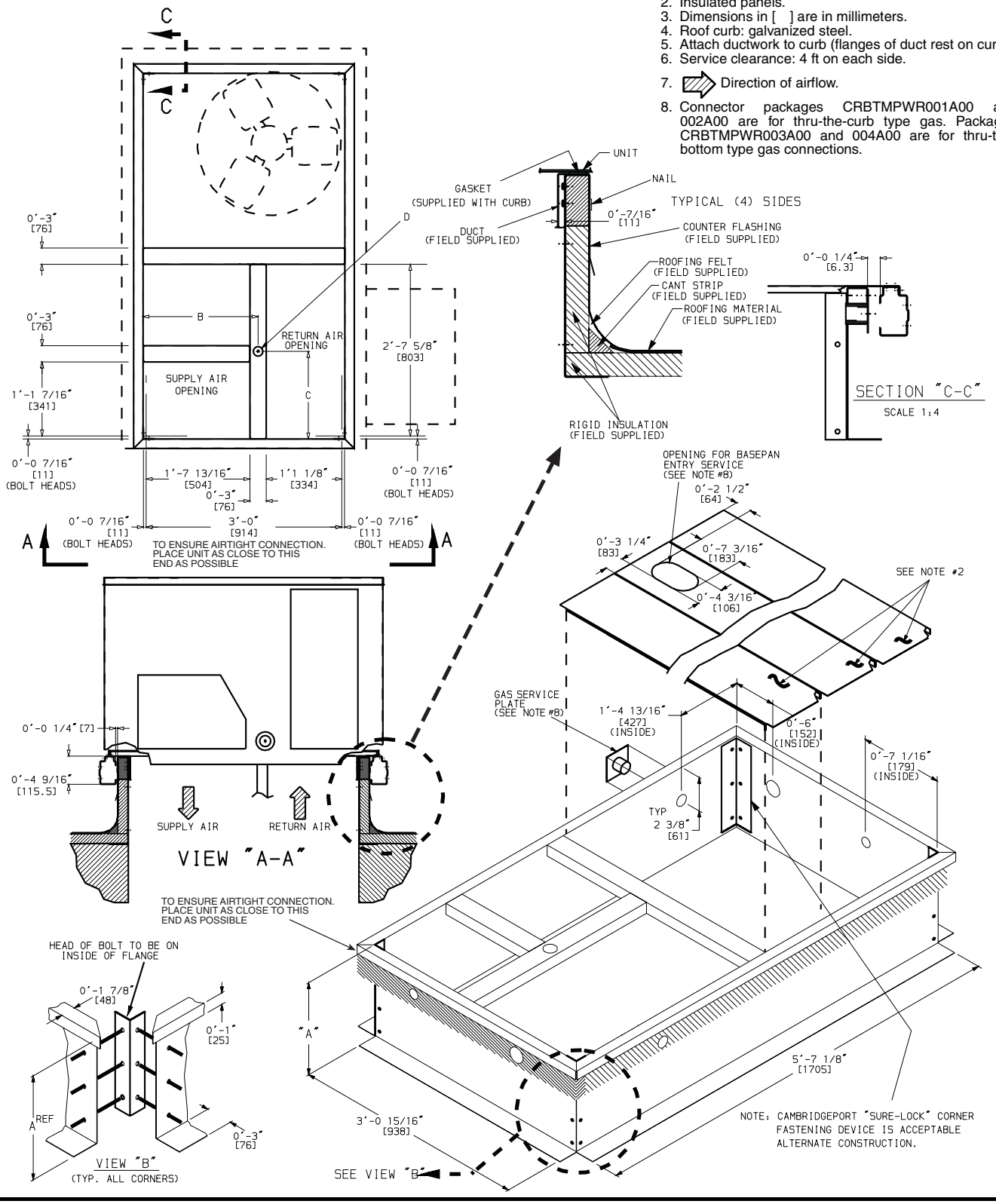


Accessory dimensions — 48TF004-007

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	1′-9 11/16″ [551]	1′-4″ [406]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A00	1′-2″ [356]	48TF004-007
CRRFCURB002A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance: 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 002A00 are for thru-the-curb type gas. Packages CRBTMPWR003A00 and 004A00 are for thru-the-bottom type gas connections.

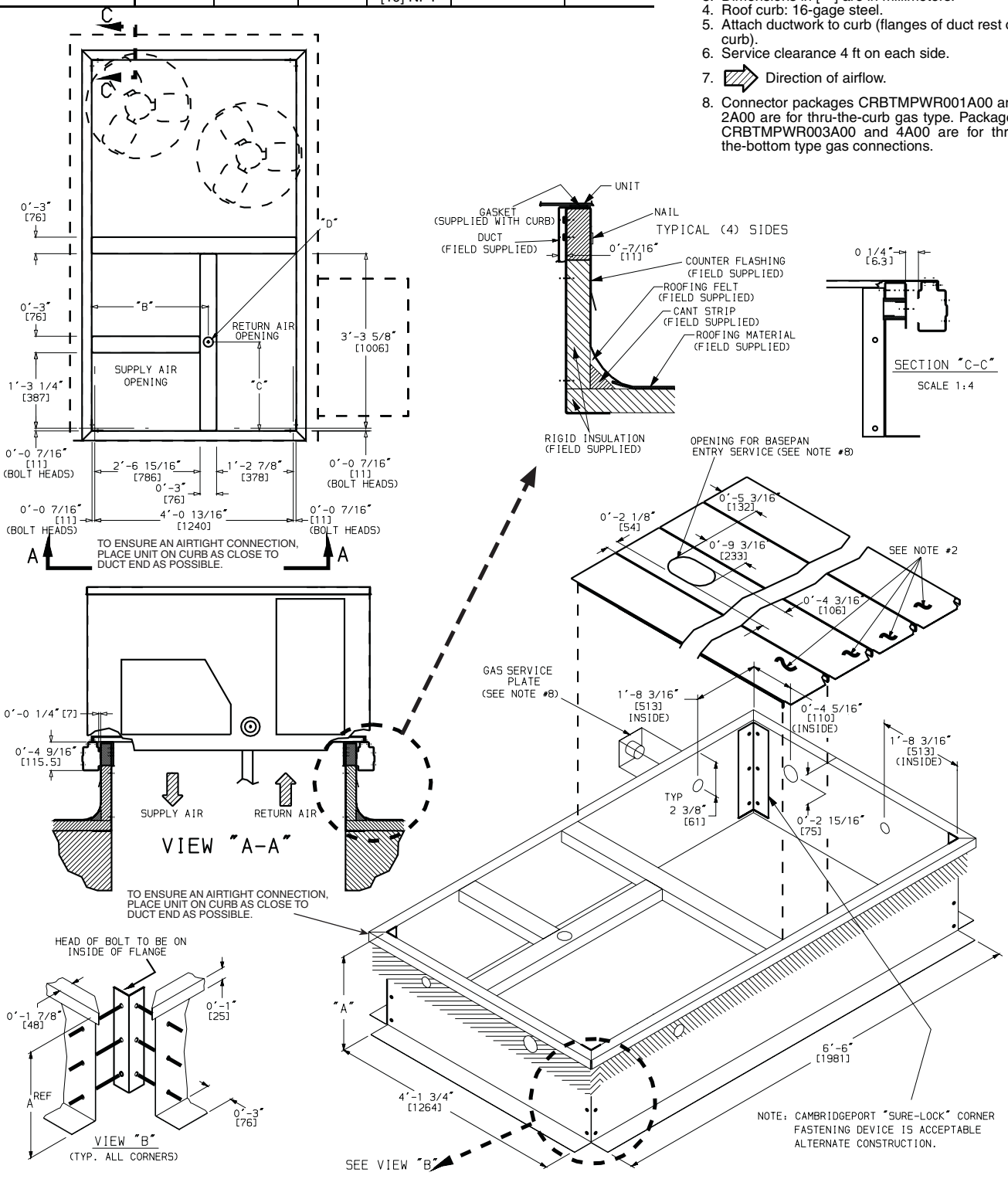


Accessory dimensions — 48TF008-014

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	2′-8 7/16″ [827]	1′-10 15/16″ [583]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	"A"	UNIT SIZE 48TF
CRRFCURB003A00	1′-2″ [356]	008-014
CRRFCURB004A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels: 1-in. thick polyurethane foam, 1 3/4 lb density.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: 16-gage steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 2A00 are for thru-the-curb gas type. Packages CRBTMPWR003A00 and 4A00 are for thru-the-bottom type gas connections.



Selection procedure (with 48TF006 example)

I Determine cooling and heating loads at design conditions.

Given:

Required Cooling Capacity (TC) . . . . . .67,000 Btuh
Sensible Heat Capacity (SHC). . . . . .46,000 Btuh
Required Heating Capacity. . . . . .60,000 Btuh
Outdoor Entering-Air Temperature db . . . . . .95 F
Outdoor Entering-Air Temperature wb. . . . . .75 F
Outdoor-Air Entering Airflow Cfm . . . . . 450 Cfm
Outdoor-Air Winter Design Temperature . . . . . 0° F
Indoor-Air Winter Design Temperature . . . . . .70 F
Air to room including outdoor air . . . . . 2000 Cfm
External Static Pressure . . . . . Supply — 0.60 in. wg
Return — 0.2 in. wg
Indoor-Air Temperature db (room air) . . . . . .78 F
Indoor-Air Temperature wb (room air) . . . . . .65 F
Indoor-Air Exhaust Cfm . . . . . 450 Cfm
Electrical Characteristics (V-Ph-Hz) 230-3-60

Vertical discharge unit with Energy$Recycler required.

II Determine fan speed and power requirements at design conditions.

Before entering the Fan Performance tables, calculate the total static pressure required based on unit component. From the given and the Accessory/FIOP Static Pressure of the 48TF find:

External static pressure supply	0.6 in. wg
External static pressure return	0.2 in. wg
Accessory static — None	0.0 in. wg
Total Static	0.8 in. wg

Enter the Fan Performance table for vertical discharge units of the 48TF006 at 0.80 in. wg at 2000 cfm. The standard motor will provide 0.73 ESP at high speed. This does not meet the required ESP of 0.8 in. wg. Choose the alternate motor. The alternate motor rpm is 1227, Bhp is 1.40, and Watts is 1431.

NOTE: Convert to Fan Heat using the formula below.

Indoor Fan Heat = watts x 3.413 Btuh/watt
= 1431 x 3.413 = 4884 Btuh

III Select Energy$Recycler based on Outdoor Entering Cfm.

Entering the Energy$Recycler Product Data literature, see the Cooling Ratings table in the Capacities section. At 450 cfm entering outdoor airflow, choose Model 62AQ060.

Using 450 cfm outdoor supply airflow, 95 F OD DB, and 75 F OD WB find performance of the 62AQ060 at these conditions:

Energy$Recycler Gross Cooling Capacity is	13,000 Btuh
Energy$Recycler Gross Sensible Capacity is	10,090 Btuh
Compressor power is	1.06 kW
Energy$Recycler Leaving db is	73.0 F
Energy$Recycler Leaving wb is	66.9 F

IV Using the simplified* method below, calculate the approximate mixed air temperature for the rooftop unit evaporator coil.

Using the outdoor-air entering cfm, the room cfm and the room exhaust airflow with their respective db and wb temperatures, determine the db and wb entering the rooftop evaporator coil.

a) Estimate the mixed air db to the evaporator coil.

t mix db = ((cfm oa x t oa db) + ((cfm ra – cfm exh) x t ra db)) / (cfm oa + (cfm ra – cfm exh))

((450 cfm x 73.0 F) + ((2000 cfm – 450 cfm) x 78 F)) / (450 cfm + (2000 cfm – 450 cfm))

Mixed air into the rooftop evaporator coil
= 76.9 F db

b) Estimate the mixed air wb to the evaporator coil.

t mix wb* = ((cfm oa x t oa wb) + ((cfm ra – cfm exh) x t ra wb)) / (cfm oa + (cfm ra – cfm exh))

((450 cfm x 66.9 F) + ((2000 cfm – 450 cfm) x 65 F)) / (450 cfm + (2000 cfm – 450 cfm))

Mixed air temperature into the rooftop evaporator
= 65.40 F wb

*Simplified method of determining wet bulb (wb) temperature of mixture. This approximation is used because the wb lines in the area of the psychrometric chart in the area used in the calculation is relatively linear, providing a close approximation. A more accurate solution can be found using the E-Cat program.

LEGEND

cfm — cubic feet per minute of air
db — dry bulb
exh — Energy$Recycler discharge
mix — mixture of outdoor + return air
oa — outside air leaving Energy$Recycler
ra — return air
sa — supply air at coil (sa = oa + ra – exh)
t — temperature
wb — wet bulb

V Determine the cooling load requirement for the rooftop unit.

Customer load is	67,000 Btuh
Less TC supplied by the Energy$Recycler	–13,000 Btuh
Rooftop cooling load required is	54,000 Btuh

VI Select the rooftop unit based on mixed air entering conditions and cooling load.

Enter cooling capacity table at outdoor entering temperature 95 F, mixed air entering evaporator at 2000 cfm, 76.9 F db, and 65.4 F wb. Interpolation is required.

The 48TF006 will provide a total gross cooling capacity of 58,400 Btuh, a sensible cooling of 51,400 Btuh, and a kW rating of 5.69.

Since these values were not at 80 F entering db, they were calculated based on the notes following the Cooling Capacity tables.

NOTE: Unit ratings are gross capacities and do not include the effect of evaporator-fan motor heat. To calculate net capacities see Steps VII and VIII.

VII Select net heating capacity of unit to meet design condition requirements.

Enter the Heating Capacities and Efficiencies rating table. The 48TFD006 unit will provide 59,200 Btuh of heating.

Enter the 62AQ060 Heating rating table at 450 cfm. At 70 F and 0° F find the heating value for the Energy$Recycler to be 15.2 MBtuh.

The customer heat requirement is 60,000 Btuh.

Rooftop Heat Capacity	59,200 Btuh
Rooftop fan heat from Step II	4,884 Btuh
Energy$Recycler Heat Capacity	15,200 Btuh
add Energy$Recycler optional supply fan heat if supplied	0 Btuh
Total Unit heat with Energy$Recycler	79,284 Btuh

The required heating capacity is 60,000 Btuh. The total unit net heating capacity is 79,284 Btuh. The 48TFD006 unit is sufficient.

VIII Determine net cooling capacity.

Cooling capacities are gross capacities and do not include indoor (evaporator) or optional Energy$Recycler supply fan heat.

Determine net cooling capacity using the following formula:

Net Capacity = (Gross Capacity Rooftop Unit + Energy$Recycler) – (Indoor [evaporator] fan motor [IFM] Heat + Optional Energy$Recycler Supply Fan Motor Heat)

Gross Total Cooling	
Rooftop unit	58,400 Btuh
Energy$Recycler	13,000 Btuh
Total	71,400 Btuh
Less	
IFM heat (from Step II)	<4,884> Btuh
Opt. Energy$Recycler Supply Fan Motor Heat	none
Net Total Capacity	66,516 Btuh
Gross Sensible Cooling	
Rooftop unit	51,400 Btuh
Energy$Recycler	10,090 Btuh
Total	61,490 Btuh
Less	
IFM heat (from Step II)	<4,884> Btuh
Opt. Energy$Recycler Supply Fan Motor Heat	none
Net Sensible Capacity	56,606 Btuh

IX Determine the operating watts of the rooftop unit and Energy$Recycler unit.

Cooling with Energy$Recycler in operation:

a) Rooftop unit:

Using the 48TF006 cooling capacity table and the calculations described in Step VI of this procedure, determine:

compressor watts	5,690 watts
Indoor fan motor from Step II	1,431 watts

Outdoor fan motor from Physical Data table find 1/4 hp†

Assume OD motor efficiency is 0.75.

Watts = (746 x hp)/(motor Eff)
= (746 x 1/4)/(0.75)
= 249 watts

†Dual circuit units will have two outdoor fans, double values.

b) Energy$Recycler:

Compressor watts from 62AQ060 Cooling Ratings table	1,060 watts
Optional supply fan from fan curves	none selected
Exhaust fan operating watts from 62AQ060 Exhaust Fan Performance Curve at 230-v, 450 cfm, 0.2 in. wg, Static =	110 watts
Total watts for the unit in operation at design conditions	8,540 watts

X Electrical data RLA, FLA, LRA, MCA and MOCP.

Separate Power Supply:

If the 62AQ is wired for separate power see the Electrical Data table.

Single Power Supply with Unit:

The unit is 230 v-3-60 Hz, so from the 48TF Electrical Data table, find unit electrical data. For the rooftop unit with alternate indoor fan motor the data is MCA = 27.3 amps, MOCP = 35 amps, Min Unit Disconnect Size FLA = 27, and LRA = 128.

For this example follow the steps outlined in the Application Data section of the Energy$Recycler Product Data for single power supply for all rooftop units except size 014 (230-v) and 62AQ on 460-v power supply. For other size and voltage conditions follow corresponding steps also outlined in the Energy$Recycler Product Data Application data section.

From the Single Power Supply table (Electrical Data, Energy$Recycler Product Data) find 230 v, for 62AQ060300, "X" = 8.1 amps and "Y" = 9.3 amps.

Add "X" amps to the MCA and MOCP and add "Y" amps to the minimum disconnect size.

	MCA	MOCP	FLA	LRA
48TF	27.3	35	27	128
62AQ	8.1	8.1	9.3	31.7
Total	35.4	43.1	36.3	159.7

(MOCP calculation is 43.1. Round the value down to 40. 40 is greater than the MCA of 35.4, therefore 40 is the correct MOCP.)

The wiring to the unit must be suitable for the MCA calculated above.

The overcurrent protective device for the combination load is equal to 40, thus a single disconnect may be used for BOTH the MAIN UNIT and the 62AQ provided that the wire supplying the 62AQ is sized for a minimum of 33% of the maximum overcurrent protection device value (i.e., 40 x .33 = 14 Amps). No further subfusing is required.

In this example a 40-amp disconnect would be used for the combined load of the 48TF006 and the 62AQ060 Energy$Recycler unit.

Performance data

COOLING CAPACITIES

48TF004 (3 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		900/0.11			1200/0.14			1500/0.17		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	42.8	38.9	35.0	44.8	40.8	37.0	45.8	41.9	38.2
	SHC	20.0	24.5	28.7	21.8	27.5	32.8	23.0	30.0	36.0
	kW	2.91	2.81	2.70	2.99	2.88	2.78	3.02	2.92	2.82
85	TC	40.8	36.9	33.3	42.5	38.7	35.0	43.6	39.9	36.1
	SHC	19.4	23.7	27.9	21.0	26.8	31.8	22.6	29.7	35.1
	kW	3.14	3.01	2.90	3.20	3.08	2.97	3.24	3.14	3.02
95	TC	38.7	34.9	31.4	40.4	36.6	33.0	41.4	37.6	34.1
	SHC	18.6	22.9	27.0	20.3	26.0	30.9	22.0	28.8	34.0
	kW	3.35	3.21	3.09	3.42	3.29	3.16	3.47	3.35	3.22
105	TC	36.5	32.8	29.2	38.1	34.3	30.9	39.0	35.2	32.4
	SHC	17.8	22.1	25.9	19.6	25.2	29.8	21.2	28.0	32.3
	kW	3.55	3.41	3.27	3.63	3.49	3.35	3.68	3.54	3.43
115	TC	34.3	30.7	26.9	35.7	32.1	28.8	36.5	32.9	30.6
	SHC	17.0	21.3	24.8	19.0	24.4	28.8	20.5	27.1	30.6
	kW	3.76	3.60	3.45	3.84	3.68	3.54	3.88	3.74	3.64

48TF005 (4 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		1200/0.12			1600/0.15			2000/0.18		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	57.9	53.1	48.3	60.4	55.9	51.3	62.2	57.3	52.9
	SHC	27.2	33.3	39.2	29.4	37.2	44.8	31.4	40.3	49.1
	kW	4.07	3.93	3.79	4.17	4.03	3.90	4.24	4.08	3.96
85	TC	55.7	50.8	45.3	57.7	53.4	48.5	59.4	55.0	50.2
	SHC	26.4	32.5	37.8	28.4	36.7	43.6	30.5	40.3	47.9
	kW	4.40	4.24	4.08	4.47	4.35	4.20	4.54	4.42	4.25
95	TC	52.9	48.1	42.5	55.2	50.5	45.7	56.7	52.0	47.4
	SHC	25.5	31.5	36.4	27.6	35.6	42.2	29.7	39.2	46.7
	kW	4.70	4.54	4.36	4.78	4.63	4.47	4.87	4.70	4.56
105	TC	50.1	45.3	39.8	52.3	47.6	42.8	53.6	48.9	44.9
	SHC	24.4	30.3	35.1	26.7	34.5	40.7	28.8	38.1	44.6
	kW	5.00	4.81	4.62	5.10	4.91	4.73	5.17	4.99	4.84
115	TC	47.3	42.6	37.2	49.3	44.6	40.0	50.5	45.9	42.4
	SHC	23.4	29.2	33.7	25.9	33.3	39.3	27.8	37.1	42.4
	kW	5.30	5.07	4.88	5.42	5.19	4.99	5.48	5.28	5.12

48TF006 (5 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		1500/0.07			2000/0.09			2500/0.12		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	71.0	63.8	55.4	74.5	67.2	59.2	76.5	69.7	62.1
	SHC	33.9	41.5	47.9	37.4	47.4	55.8	40.6	52.8	61.8
	kW	5.04	4.82	4.62	5.20	4.97	4.76	5.29	5.06	4.87
85	TC	69.2	61.0	54.2	72.9	65.6	57.2	75.2	68.1	61.5
	SHC	33.4	40.5	47.3	37.0	46.9	54.9	40.1	52.3	61.3
	kW	5.50	5.27	5.02	5.66	5.41	5.18	5.75	5.50	5.29
95	TC	65.5	56.6	50.4	69.4	60.9	53.1	71.2	63.3	57.8
	SHC	32.1	38.8	45.6	35.8	45.3	52.6	39.1	50.9	57.8
	kW	5.88	5.62	5.37	6.01	5.76	5.53	6.12	5.87	5.67
105	TC	61.9	53.1	47.1	65.4	56.6	50.5	67.1	58.8	54.5
	SHC	30.8	37.5	44.1	34.5	43.7	50.2	37.9	49.3	54.5
	kW	6.25	5.99	5.72	6.38	6.13	5.91	6.50	6.23	6.06
115	TC	58.2	49.7	43.7	61.4	52.3	47.8	63.0	54.3	51.2
	SHC	29.5	36.1	42.5	33.2	42.1	47.8	36.7	47.6	51.2
	kW	6.63	6.35	6.08	6.75	6.49	6.29	6.88	6.59	6.46

Standard Ratings

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil.

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.
Below 80 F edb, subtract (corr factor x cfm) from SHC.
Above 80 F edb, add (corr factor x cfm) to SHC.
Correction Factor = 1.10 x (1 – BF) x (edb – 80).

48TF007 (6 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		1800/0.06			2100/0.08			2400/0.09			3000/0.11		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	86.6	80.0	73.6	87.8	80.3	73.2	90.8	84.1	77.2	93.2	86.6	79.7
	SHC	42.2	52.3	62.2	43.0	53.9	65.5	46.5	59.6	71.6	50.1	66.4	78.7
	kW	5.48	5.33	5.21	5.69	5.50	5.32	5.59	5.44	5.29	5.66	5.51	5.35
85	TC	84.1	77.4	71.0	84.0	77.2	69.5	87.8	81.2	74.5	90.1	83.5	77.3
	SHC	41.4	51.3	61.1	41.7	53.1	64.0	45.5	58.6	70.3	49.4	65.4	76.7
	kW	6.17	6.00	5.85	6.21	6.04	5.83	6.27	6.11	5.94	6.35	6.19	6.02
95	TC	81.6	74.7	68.5	81.0	73.5	66.3	84.8	78.2	71.8	87.0	80.4	74.8
	SHC	40.6	50.3	60.0	40.8	51.8	62.8	44.6	57.6	69.1	48.7	64.5	74.7
	kW	6.86	6.67	6.49	6.78	6.54	6.33	6.95	6.77	6.59	7.03	6.86	6.69
105	TC	78.4	71.8	65.6	76.8	69.7	62.5	81.6	74.9	68.9	83.3	76.9	72.1
	SHC	39.4	49.2	58.7	39.4	50.3	61.1	43.5	56.4	67.4	47.4	63.1	72.0
	kW	7.60	7.39	7.20	7.30	7.05	6.80	7.72	7.50	7.31	7.77	7.59	7.41
115	TC	75.1	68.7	62.5	72.5	65.5	58.7	78.0	71.5	66.1	79.5	73.3	69.3
	SHC	38.1	47.9	57.2	37.9	48.7	58.7	42.3	55.1	65.5	46.3	61.6	69.2
	kW	8.36	8.14	7.93	7.81	7.53	7.27	8.49	8.25	8.06	8.55	8.33	8.18

COOLING CAPACITIES (cont)

48TF008 (7 1/2 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		2250/0.07			2800/0.09			3000/0.10			3750/0.12		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	102.8	94.8	86.2	105.8	98.2	90.0	106.4	99.0	90.8	109.2	101.6	93.6
	SHC	49.4	61.8	73.2	52.6	67.8	81.6	53.6	69.8	84.0	58.2	77.4	92.2
	kW	7.14	6.82	6.50	7.28	6.98	6.68	7.32	7.04	6.72	7.46	7.18	6.86
85	TC	98.2	90.2	81.6	101.8	93.6	85.2	102.6	94.4	86.0	104.6	96.8	89.6
	SHC	48.0	60.2	71.2	51.6	66.4	79.6	52.8	68.6	82.0	56.8	76.0	89.4
	kW	7.66	7.34	7.00	7.82	7.50	7.18	7.86	7.54	7.22	7.98	7.68	7.40
95	TC	93.8	85.2	76.6	97.0	88.4	80.0	97.6	89.0	81.2	99.4	91.2	85.2
	SHC	46.4	58.2	68.8	50.2	64.6	77.2	51.4	66.8	79.0	55.6	74.4	85.2
	kW	8.18	7.84	7.48	8.36	8.00	7.64	8.40	8.04	7.70	8.50	8.16	7.92
105	TC	88.4	79.8	70.8	91.0	82.8	74.6	91.6	83.4	76.0	93.8	85.4	80.6
	SHC	44.6	56.2	66.0	48.2	62.6	74.2	49.4	64.8	75.6	54.2	72.4	80.6
	kW	8.68	8.30	7.98	8.80	8.46	8.14	8.86	8.50	8.20	8.98	8.64	8.42
115	TC	82.8	73.8	66.0	85.2	76.8	69.6	85.6	77.4	71.0	87.6	79.4	76.0
	SHC	42.6	53.8	63.2	46.4	60.4	69.6	47.8	62.6	71.0	52.8	70.4	75.8
	kW	9.16	8.78	8.42	9.30	8.92	8.64	9.34	8.96	8.72	9.48	9.10	8.94

48TF009 (8 1/2 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		2550/0.08			3000/0.10			3400/0.11			4250/0.135		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	116.6	108.4	99.0	119.2	111.3	101.8	120.1	112.8	103.6	122.3	114.8	106.3
	SHC	71.9	61.9	75.9	75.2	65.1	81.4	80.5	68.0	85.6	32.7	73.9	94.4
	kW	7.77	7.57	7.38	7.86	10.68	7.44	7.89	6.72	7.51	7.97	7.80	7.60
85	TC	113.3	104.2	94.0	115.7	106.9	97.0	117.2	108.7	98.8	120.1	111.0	101.8
	SHC	54.0	67.7	80.4	56.3	72.5	87.1	58.2	76.4	92.5	62.9	84.2	101.0
	kW	8.46	8.22	7.96	5.54	8.31	8.04	8.60	8.38	8.12	8.72	8.48	8.23
95	TC	109.1	99.3	87.3	111.2	102.0	91.4	112.5	103.6	93.7	115.3	105.8	107.4
	SHC	52.6	65.9	77.4	55.0	70.9	84.9	57.1	75.1	90.3	62.2	83.2	97.3
	kW	8.90	8.97	8.68	8.99	9.06	8.79	9.06	9.12	8.86	4.76	9.24	9.00
105	TC	103.3	94.0	81.4	105.9	96.3	84.6	107.4	97.7	87.9	109.4	99.9	92.8
	SHC	50.5	54.0	74.5	53.5	69.1	81.4	55.8	73.1	86.6	60.4	81.4	92.8
	kW	9.74	9.43	9.08	9.85	9.54	9.21	9.92	9.60	9.29	10.03	9.72	9.48
115	TC	97.7	87.9	75.9	99.9	90.4	78.8	101.3	91.8	82.4	102.9	93.8	88.3
	SHC	48.7	61.7	71.9	51.8	66.9	78.1	54.0	71.2	82.3	58.5	79.4	88.2
	kW	10.33	9.97	9.61	10.46	10.10	9.75	10.54	10.18	9.88	10.61	10.30	10.10

Standard Ratings

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil.

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.
Below 80 F edb, subtract (corr factor x cfm) from SHC.
Above 80 F edb, add (corr factor x cfm) to SHC.
Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

48TF012 (10 TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		3000/0.095			4000/0.125			5000/0.15		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	135.8	124.8	112.0	142.4	130.6	119.8	146.5	134.2	123.7
	SHC	66.8	82.6	97.4	73.2	93.4	112.7	79.7	104.4	123.1
	kW	9.76	9.41	9.10	10.00	9.61	9.27	10.17	9.75	9.41
85	TC	130.0	119.6	104.0	136.0	125.0	114.5	140.0	127.9	118.8
	SHC	64.3	80.5	93.8	71.1	91.7	110.2	77.5	101.8	118.7
	kW	10.41	10.07	9.74	10.67	10.28	9.94	10.84	10.41	10.09
95	TC	124.1	113.7	96.7	129.5	118.9	106.9	132.8	122.0	114.1
	SHC	62.2	78.4	90.0	69.1	89.8	105.9	74.9	100.1	114.0
	kW	11.13	10.78	10.40	11.38	10.99	10.63	11.52	11.14	10.83
105	TC	118.1	104.6	87.9	122.7	111.8	98.5	126.0	115.1	108.0
	SHC	60.4	74.9	85.2	66.9	87.7	98.5	73.1	98.3	108.0
	kW	11.93	11.52	11.10	12.13	11.74	11.41	12.27	11.89	11.65
115	TC	115.0	98.0	84.2	120.0	103.8	93.4	122.6	109.8	102.8
	SHC	59.4	72.4	83.4	66.4	84.8	93.4	72.8	96.9	102.8
	kW	12.26	11.82	11.40	12.48	12.06	11.78	12.60	12.20	12.00

48TF014 (12½ TONS)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		3750/0.08			4500/0.09			5000/0.10			6250/0.12		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	175.6	162.2	149.2	181.0	167.5	154.2	182.9	170.2	156.4	187.2	174.7	161.8
	SHC	85.7	107.3	128.0	91.4	116.2	140.3	94.2	122.2	146.5	102.1	135.3	160.7
	kW	11.16	10.85	10.57	11.32	11.00	10.69	11.37	11.07	10.73	11.49	11.19	10.87
85	TC	169.3	155.7	140.6	174.2	160.7	147.0	176.9	163.0	149.7	181.5	167.3	155.8
	SHC	83.9	104.8	124.0	89.6	113.9	137.0	92.7	119.7	143.6	100.9	133.4	155.6
	kW	12.15	11.78	11.42	12.31	11.94	11.58	12.39	12.01	11.63	12.53	12.14	11.82
95	TC	161.9	148.9	132.0	166.8	153.5	139.1	169.5	155.7	142.8	173.2	159.5	149.6
	SHC	81.4	102.0	119.8	87.0	111.1	133.2	90.7	117.3	140.2	98.3	130.8	149.6
	kW	13.12	12.72	12.28	13.30	12.89	12.46	13.40	12.97	12.56	13.54	13.11	12.78
105	TC	154.9	141.3	123.0	158.8	145.4	130.2	160.9	147.6	135.0	165.3	151.2	143.2
	SHC	79.0	99.2	115.5	84.5	108.2	128.1	87.8	114.3	134.9	96.6	127.8	143.1
	kW	14.16	13.66	13.17	14.31	13.82	13.35	14.38	13.91	13.48	14.58	14.07	13.77
115	TC	146.2	132.2	113.1	150.5	137.0	122.4	152.3	139.4	127.8	155.2	142.7	136.0
	SHC	76.1	95.7	110.3	81.7	105.2	122.3	85.0	111.6	127.7	92.9	125.0	135.8
	kW	15.09	14.57	14.07	15.30	14.76	14.25	15.37	14.87	14.43	15.49	15.02	14.73

Standard Ratings

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil.

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.
Below 80 F edb, subtract (corr factor x cfm) from SHC.
Above 80 F edb, add (corr factor x cfm) to SHC.
Correction Factor = 1.10 x (1 – BF) x (edb – 80).

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS

48TF004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
900	0.49	0.21	253	0.50	0.23	277	0.51	0.26	307	0.55	0.31	363
1000	0.42	0.23	270	0.43	0.25	292	0.43	0.27	321	0.51	0.32	374
1100	0.37	0.24	287	0.38	0.26	307	0.39	0.28	335	0.46	0.33	385
1200	0.33	0.26	304	0.33	0.27	323	0.34	0.29	349	0.40	0.34	397
1300	0.27	0.27	321	0.28	0.29	338	0.28	0.31	364	0.34	0.34	408
1400	0.20	0.29	338	0.23	0.30	354	0.25	0.32	378	—	—	—
1500	0.16	0.30	355	0.18	0.31	369	0.20	0.33	392	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for Additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TF004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**581**	**0.12**	**119**	**673**	**0.18**	**179**	**736**	**0.22**	**219**	805	0.25	249	865	0.29	288	911	0.34	338
1000	**644**	**0.19**	**189**	**709**	**0.22**	**219**	782	0.28	279	835	0.30	298	900	0.35	348	937	0.38	378
1100	**687**	**0.22**	**219**	**746**	**0.26**	**259**	806	0.30	298	867	0.35	348	929	0.40	398	964	0.40	398
1200	**733**	**0.26**	**259**	785	0.32	318	843	0.35	348	903	0.41	408	960	0.47	467	994	0.50	497
1300	**754**	**0.29**	**288**	826	0.38	378	891	0.43	428	942	0.48	477	991	0.53	527	**1047**	**0.60**	**597**
1400	810	0.35	348	868	0.45	448	937	0.51	507	984	0.57	567	**1032**	**0.62**	**617**	**1067**	**0.67**	**666**
1500	841	0.42	418	911	0.53	527	985	0.61	607	**1029**	**0.66**	**656**	**1073**	**0.72**	**716**	**1109**	**0.77**	**766**

48TF004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	957	0.39	388	988	0.43	428	**1039**	**0.47**	**448**	**1061**	**0.51**	**487**	**1083**	**0.54**	**527**	**1105**	**0.58**	**567**
1000	992	0.44	438	**1039**	**0.49**	**487**	**1061**	**0.55**	**507**	**1088**	**0.60**	**547**	**1111**	**0.66**	**587**	**1136**	**0.72**	**627**
1100	**1013**	**0.49**	**487**	**1068**	**0.55**	**547**	**1091**	**0.61**	**577**	**1109**	**0.66**	**607**	**1127**	**0.73**	**637**	**1145**	**0.80**	**666**
1200	**1045**	**0.56**	**557**	**1090**	**0.64**	**637**	**1109**	**0.68**	**647**	**1156**	**0.73**	**676**	**1203**	**0.81**	**706**	**1250**	**0.86**	**736**
1300	**1075**	**0.64**	**637**	**1122**	**0.70**	**696**	**1152**	**0.76**	**716**	**1190**	**0.82**	**756**	**1228**	**0.87**	**796**	**1266**	**0.94**	**836**
1400	**1110**	**0.73**	**726**	**1160**	**0.78**	**766**	**1181**	**0.83**	**806**	**1237**	**0.88**	**845**	**1293**	**0.94**	**885**	**1349**	**0.99**	**925**
1500	**1150**	**0.78**	**816**	**1190**	**0.84**	**855**	**1225**	**0.89**	**895**	**1271**	**0.95**	**945**	**1317**	**1.00**	**995**	1383	1.05	1044

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 760 to 1000 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▒ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 1.0 and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**673**	**0.18**	**179**	**805**	**0.25**	**249**	**911**	**0.34**	**338**	**988**	**0.43**	**428**	**1061**	**0.47**	**487**
1000	**709**	**0.22**	**219**	**835**	**0.30**	**298**	**937**	**0.38**	**378**	**1039**	**0.49**	**487**	1086	0.55	547
1100	**746**	**0.26**	**259**	**867**	**0.35**	**348**	**964**	**0.40**	**398**	**1068**	**0.55**	**547**	1109	0.61	607
1200	**785**	**0.32**	**318**	**903**	**0.41**	**408**	**994**	**0.50**	**497**	1090	0.64	637	1156	0.68	676
1300	**826**	**0.38**	**378**	**942**	**0.48**	**477**	**1047**	**0.60**	**597**	1122	0.70	696	1190	0.76	756
1400	**868**	**0.45**	**448**	**984**	**0.57**	**567**	**1067**	**0.67**	**666**	1160	0.84	766	1237	0.85	845
1500	**911**	**0.53**	**527**	**1029**	**0.66**	**656**	1109	0.77	766	1190	1.00	855	1271	0.95	945

48TF004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1105	0.57	567	1140	0.63	622	1170	0.68	674	1198	0.73	723	1224	0.77	771
1000	1136	0.63	627	1172	0.69	688	1203	0.75	745	1232	0.80	799	1258	0.86	852
1100	1145	0.67	666	1181	0.73	731	1213	0.80	792	1242	0.85	850	1268	0.91	906
1200	1210	0.74	736	1248	0.81	808	1282	0.88	875	1312	0.94	939	1340	1.01	1000
1300	1266	0.84	836	1306	0.92	917	1341	1.00	993	1373	1.07	1066	1402	1.14	1136
1400	1349	0.93	925	1391	1.02	1015	1429	1.11	1100	**1463**	**1.19**	**1180**	**1494**	**1.26**	**1257**
1500	1383	1.05	1044	1426	1.15	1146	**1465**	**1.25**	**1242**	**1500**	**1.34**	**1332**	**1532**	**1.43**	**1419**

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1075 to 1455 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
3. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
4. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
5. Interpolation is permissible. Do not extrapolate.

48TF005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1200	0.68	0.41	458	0.74	0.45	506	0.74	0.51	572	0.85	0.56	632
1300	0.61	0.42	471	0.67	0.46	521	0.66	0.52	589	0.78	0.58	651
1400	0.53	0.45	503	0.59	0.49	556	0.59	0.54	616	0.70	0.60	681
1500	0.45	0.47	536	0.51	0.52	593	0.52	0.56	631	0.63	0.62	698
1600	0.36	0.49	557	0.42	0.54	616	0.45	0.58	654	0.56	0.64	723
1700	0.26	0.52	584	0.32	0.57	646	0.37	0.60	678	0.48	0.66	750
1800	0.15	0.54	610	0.22	0.60	674	0.30	0.62	698	0.41	0.68	772
1900	0.04	0.56	629	0.11	0.62	696	0.23	0.64	720	0.34	0.70	796
2000	—	—	—	—	—	—	0.16	0.66	744	0.26	0.73	823

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**596**	**0.20**	**210**	**665**	**0.25**	**263**	**722**	**0.31**	**320**	**779**	**0.36**	**378**	872	0.48	504	915	0.54	567	957	0.60	630
1300	**633**	**0.24**	**252**	**699**	**0.30**	**315**	**754**	**0.36**	**378**	**809**	**0.42**	**441**	902	0.55	578	943	0.61	641	984	0.67	704
1400	**672**	**0.30**	**315**	**735**	**0.36**	**378**	**788**	**0.42**	**441**	840	0.48	504	933	0.62	651	972	0.69	720	1011	0.75	788
1500	**711**	**0.35**	**368**	**770**	**0.42**	**441**	**822**	**0.49**	**510**	873	0.55	578	963	0.69	725	1002	0.77	804	1041	0.84	858
1600	**751**	**0.42**	**441**	835	0.49	515	871	0.56	588	907	0.63	662	993	0.77	787	1033	0.85	869	1072	0.93	950
1700	**791**	**0.49**	**515**	873	0.57	599	907	0.65	678	941	0.72	757	1024	0.87	889	1064	0.96	976	1103	1.04	1063
1800	**831**	**0.58**	**609**	881	0.66	693	929	0.74	772	976	0.81	851	1057	0.97	991	1095	1.06	1078	1132	1.14	1165
1900	872	0.67	704	919	0.75	788	965	0.84	877	1011	0.92	967	1091	1.08	1104	1127	1.17	1191	1162	1.25	1277
2000	913	0.77	809	958	0.86	904	1002	0.95	993	1046	1.03	1082	1125	1.21	1237	1160	1.30	1323	1195	1.38	1410

48TF005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.9			1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	993	0.65	678	1028	0.69	725	1056	0.72	751	1083	0.74	778	1134	0.80	935	1185	0.88	965	**1331**	**0.99**	**1000**
1300	1021	0.74	772	1058	0.80	841	1090	0.85	888	1121	0.89	935	1171	0.94	988	**1219**	**1.00**	**999**	1268	1.10	1029
1400	1049	0.82	837	1086	0.89	885	1120	0.96	950	1153	1.00	976	1210	1.12	1071	1257	1.17	1105	1307	1.25	1190
1500	1077	0.92	922	1113	0.99	985	1147	1.06	1054	1180	1.13	1081	1241	1.27	1215	1295	1.37	1294	1339	1.43	1350
1600	1107	1.00	998	1141	1.09	1084	1174	1.17	1134	1207	1.25	1196	1269	1.40	1339	1326	1.54	1454	1376	1.65	1558
1700	1137	1.12	1128	1171	1.20	1194	1203	1.29	1278	1235	1.37	1310	1296	1.53	1463	1354	1.70	1605	1407	1.84	1738
1800	1167	1.23	1239	1202	1.32	1313	1233	1.41	1398	1263	1.49	1425	1323	1.67	1597	1381	1.85	1747	1436	2.02	1907
1900	1197	1.35	1360	1232	1.45	1442	1263	1.54	1532	1294	1.63	1559	1351	1.81	1731	1408	2.00	1889	1463	2.19	2068
2000	1229	1.48	1491	1262	1.58	1572	1294	1.68	1671	1325	1.78	1702	1362	1.97	1884	1436	2.16	2040	1489	2.36	2229

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 835 to 1185 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▒▒▒ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 1.0 and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

48TF005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**665**	**0.25**	**263**	**779**	**0.36**	**378**	**872**	**0.48**	**504**	**957**	**0.60**	**630**	**1028**	**0.69**	**725**
1300	**699**	**0.30**	**315**	**809**	**0.42**	**441**	**902**	**0.55**	**578**	**984**	**0.67**	**704**	**1058**	**0.80**	**841**
1400	**735**	**0.36**	**378**	**840**	**0.48**	**504**	**933**	**0.62**	**651**	**1011**	**0.75**	**788**	1086	0.89	885
1500	**770**	**0.42**	**441**	**873**	**0.55**	**578**	**963**	**0.69**	**725**	**1041**	**0.84**	**858**	1113	0.99	985
1600	**835**	**0.49**	**515**	**907**	**0.63**	**662**	**993**	**0.77**	**787**	**1072**	**0.93**	**950**	1141	1.09	1084
1700	**873**	**0.57**	**599**	**941**	**0.72**	**757**	**1024**	**0.87**	**889**	1103	1.04	1063	1171	1.20	1194
1800	**881**	**0.66**	**693**	**976**	**0.81**	**851**	**1057**	**0.97**	**991**	1132	1.14	1165	1202	1.32	1313
1900	**919**	**0.75**	**788**	**1011**	**0.92**	**967**	1091	1.08	1104	1162	1.25	1277	1232	1.45	1442
2000	**958**	**0.86**	**904**	**1046**	**1.03**	**1082**	1125	1.21	1237	1195	1.38	1410	1262	1.58	1572

48TF005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1083	0.74	778	1134	0.80	935	1185	0.88	965	1331	0.99	1000	1374	1.09	1083
1300	1121	0.89	935	1171	0.94	988	1219	1.00	999	1268	1.10	1029	1309	1.21	1203
1400	1153	1.00	967	1210	1.12	1071	1257	1.17	1105	1307	1.25	1190	1349	1.37	1367
1500	1180	1.13	1081	1241	1.27	1215	1295	1.37	1294	1339	1.43	1350	1382	1.57	1564
1600	1207	1.25	1196	1269	1.40	1339	1326	1.54	1454	1376	1.65	1558	1420	1.81	1805
1700	1235	1.37	1310	1296	1.53	1463	1354	1.70	1605	1407	1.84	1738	1452	2.02	2013
1800	1263	1.49	1425	1323	1.67	1597	1381	1.85	1747	1436	2.02	1907	**1482**	**2.22**	**2210**
1900	1294	1.63	1559	1351	1.81	1731	1408	2.00	1889	**1463**	**2.19**	**2068**	—	—	—
2000	1325	1.78	1702	1362	1.97	1894	1436	2.16	2040	**1489**	**2.36**	**2229**	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1075 to 1455 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
3. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
4. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
5. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208 V			230,460,575 V			208 V			230,460,575 V			208 V			230,460,575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1500	0.69	0.67	750	1.01	0.71	791	1.00	0.70	782	1.20	0.76	845	1.22	0.79	875	1.28	0.85	949
1600	0.49	0.70	780	0.85	0.74	824	0.85	0.74	821	1.06	0.79	883	1.09	0.82	913	1.17	0.89	988
1700	0.29	0.73	810	0.70	0.77	857	0.70	0.77	861	0.93	0.83	921	0.97	0.85	950	1.06	0.92	1027
1800	0.09	0.75	839	0.54	0.80	891	0.55	0.81	900	0.80	0.86	959	0.84	0.89	988	0.95	0.96	1066
1900	—	—	—	0.39	0.83	924	0.40	0.84	940	0.67	0.90	997	0.72	0.92	1025	0.84	0.99	1105
2000	—	—	—	0.23	0.86	957	0.25	0.88	979	0.54	0.93	1035	0.59	0.95	1063	0.73	1.03	1144
2100	—	—	—	0.08	0.89	990	0.10	0.91	1018	0.41	0.96	1073	0.46	0.99	1101	0.62	1.06	1183
2200	—	—	—	—	—	—	—	—	—	0.28	1.00	1111	0.34	1.02	1138	0.51	1.10	1222
2300	—	—	—	—	—	—	—	—	—	0.15	1.03	1149	0.21	1.06	1176	0.40	1.13	1261
2400	—	—	—	—	—	—	—	—	—	0.02	1.07	1187	0.09	1.09	1213	0.29	1.17	1300
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.18	1.20	1340

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for Additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TF006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**729**	**0.36**	**368**	**788**	**0.42**	**429**	**896**	**0.56**	**572**	981	0.69	705	1070	0.85	869	1144	1.01	1032
1600	**770**	**0.42**	**429**	**826**	**0.49**	**501**	930	0.64	654	1015	0.78	797	1098	0.94	961	1173	1.11	1134
1700	**811**	**0.50**	**511**	**864**	**0.57**	**582**	964	0.72	736	1051	0.88	899	1124	1.03	1053	1203	1.21	1237
1800	**852**	**0.58**	**593**	903	0.66	674	999	0.82	838	1085	0.98	1001	1155	1.13	1155	1231	1.32	1349
1900	**893**	**0.68**	**695**	942	0.76	777	1035	0.92	940	1119	1.10	1124	1191	1.26	1288	1288	1.43	1461
2000	935	0.78	797	982	0.87	889	1070	1.04	1063	1153	1.22	1247	1227	1.40	1431	1287	1.57	1604
2100	977	0.89	910	1022	0.99	1012	1107	1.17	1196	1187	1.35	1380	1260	1.54	1574	**1323**	**1.72**	**1758**
2200	1019	1.02	1042	1063	1.12	1145	1144	1.30	1328	1222	1.49	1523	1294	1.70	1737	**1359**	**1.89**	**1931**
2300	1061	1.16	1185	1104	1.26	1288	1182	1.47	1502	1258	1.65	1686	**1328**	**1.80**	**1901**	**1393**	**2.07**	**2115**
2400	1103	1.30	1328	1145	1.41	1441	1220	1.61	1645	1293	1.80	1860	**1362**	**2.03**	**2074**	1426	2.26	2310
2500	1145	1.46	1492	1186	1.57	1604	1259	1.78	1819	**1329**	**2.00**	**2044**	1397	2.22	2269	1460	2.45	2504

48TF006 (5 TONS) - ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1226	1.19	1216	**1301**	**1.46**	**1492**	**1380**	**1.69**	**1757**
1600	1242	1.28	1308	**1318**	**1.49**	**1523**	**1392**	**1.78**	**1800**
1700	1270	1.39	1420	**1335**	**1.58**	**1615**	**1408**	**1.80**	**1850**
1800	1300	1.52	1553	**1361**	**1.71**	**1747**	**1423**	**1.91**	**1952**
1900	**1329**	**1.64**	**1676**	**1391**	**1.80**	**1891**	**1448**	**2.05**	**2095**
2000	**1355**	**1.77**	**1809**	**1420**	**1.99**	**2034**	1477	2.21	2258
2100	**1381**	**1.91**	**1952**	1449	2.14	2167	—	—	—
2200	1413	2.08	2126	1474	2.30	2350	—	—	—
2300	1449	2.26	2310	—	—	—	—	—	—
2400	1485	2.47	2524	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 900 to 1300 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 1.30 for single-phase units and 2.40 for 3-phase units and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**808**	**0.42**	**429**	**914**	**0.56**	**572**	**1001**	**0.69**	**705**	**1084**	**0.85**	**869**	**1168**	**1.01**	**1032**
1600	**846**	**0.49**	**501**	**950**	**0.64**	**645**	**1034**	**0.78**	**797**	**1111**	**0.94**	**961**	**1194**	**1.11**	**1134**
1700	**884**	**0.57**	**592**	**983**	**0.72**	**736**	**1068**	**0.88**	**899**	**1145**	**1.03**	**1053**	**1218**	**1.21**	**1237**
1800	**942**	**0.66**	**674**	**1018**	**0.82**	**838**	**1105**	**0.98**	**1001**	**1179**	**1.13**	**1155**	**1246**	**1.32**	**1349**
1900	**965**	**0.78**	**777**	**1057**	**0.92**	**940**	**1143**	**1.10**	**1124**	**1212**	**1.26**	**1288**	**1280**	**1.43**	**1481**
2000	**1008**	**0.87**	**889**	**1096**	**1.04**	**1063**	**1177**	**1.22**	**1247**	**1247**	**1.40**	**1431**	1300	1.57	1604
2100	**1051**	**0.99**	**1012**	**1136**	**1.17**	**1196**	**1210**	**1.35**	**1380**	**1284**	**1.54**	**1574**	1347	1.72	1758
2200	**1095**	**1.12**	**1145**	**1173**	**1.30**	**1328**	**1245**	**1.49**	**1523**	1322	1.70	1737	1380	1.89	1931
2300	**1140**	**1.28**	**1288**	**1210**	**1.47**	**1502**	**1284**	**1.65**	**1686**	1356	1.80	1901	1418	2.07	2115
2400	**1185**	**1.41**	**1441**	**1249**	**1.61**	**1645**	1323	1.80	1860	1389	2.03	2074	1456	2.26	2310
2500	**1231**	**1.57**	**1604**	**1289**	**1.78**	**1819**	1363	2.00	2044	1424	2.22	2269	1500	2.45	2504

48TF006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**1199**	**1.19**	**1216**	**1126**	**1.46**	**1492**	**1250**	**1.69**	**1757**	1301	1.91	1944	1349	2.12	2164
1600	**1263**	**1.28**	**1308**	**1275**	**1.49**	**1523**	**1299**	**1.78**	**1800**	1352	2.01	2047	1401	2.23	2280
1700	**1295**	**1.39**	**1420**	1351	1.58	1615	1352	1.80	1850	1407	2.03	2070	1459	2.26	2305
1800	1319	1.52	1553	1389	1.71	1747	1453	1.91	1952	1494	2.15	2197	1548	2.40	2446
1900	1343	1.64	1676	1415	1.80	1891	1478	2.05	1095	1538	2.31	2358	1594	2.57	2625
2000	1374	1.77	1809	1438	1.99	2034	1505	2.21	2258	1566	2.49	2542	1624	2.77	2830
2100	1409	1.91	1952	1465	2.14	2167	1533	2.45	2501	1596	2.77	2821	1654	3.08	3141
2200	1442	2.08	2126	1498	2.30	2350	1568	2.64	2688	1632	2.97	3031	1691	3.31	3375
2300	1475	2.26	2310	1554	2.64	2698	1627	3.03	3091	1693	3.42	3486	1755	3.81	3881
2400	1565	2.47	2524	1649	2.89	2948	1726	3.31	3379	—	—	—	—	—	—
2500	1596	2.95	3010	1682	3.45	3522	1760	3.96	4036	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1300 to 1685 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▒ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**942**	**0.70**	**646**	**978**	**0.66**	**700**	**1063**	**0.82**	**771**	1147	0.97	891	1248	1.20	1081	1322	1.33	1190
1900	**982**	**0.80**	**739**	**1023**	**0.78**	**779**	1097	0.91	843	1175	1.11	1006	1266	1.29	1156	1356	1.47	1310
2000	**1022**	**0.91**	**835**	**1068**	**0.90**	**867**	1132	1.01	924	1218	1.23	1106	1303	1.41	1258	1397	1.52	1353
2100	**1063**	**0.99**	**916**	1115	1.00	998	1180	1.17	1056	1261	1.35	1207	1340	1.53	1361	1428	1.66	1473
2200	1104	1.13	1039	1159	1.15	1081	1214	1.28	1148	1310	1.52	1353	1375	1.63	1447	1459	1.80	1595
2300	1130	1.26	1156	1202	1.29	1140	1248	1.38	1233	1358	1.69	1499	1410	1.72	1526	**1488**	**1.93**	**1709**
2400	1174	1.37	1258	1237	1.41	1224	1292	1.55	1378	1392	1.81	1604	1460	1.90	1683	**1532**	**2.14**	**1892**
2500	1201	1.48	1361	1272	1.53	1335	1335	1.71	1517	1427	1.94	1718	**1518**	**2.16**	**1910**	**1575**	**2.35**	**2076**
2600	1246	1.62	1491	1320	1.68	1482	1368	1.81	1604	1458	2.06	1823	1562	2.42	2136	1620	2.59	2283
2700	1285	1.75	1613	1361	1.82	1595	1400	1.91	1691	**1490**	**2.19**	**1936**	1602	2.64	2326	1666	2.85	2504
2800	1304	1.87	1726	1402	1.95	1639	1439	2.08	1840	1543	2.43	2145	1642	2.86	2512	—	—	—
2900	1345	2.07	1910	1446	2.16	1814	**1477**	**2.16**	**1989**	1585	2.65	2335	—	—	—	—	—	—
3000	1378	2.26	2084	**1489**	**2.36**	**2032**	1529	2.52	2223	1598	2.73	2444	—	—	—	—	—	—

48TF007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in.wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1395	1.46	1301	**1475**	**1.56**	**1387**	**1542**	**1.71**	**1517**
1900	1430	1.58	1404	**1504**	**1.69**	**1499**	**1556**	**1.82**	**1613**
2000	1459	1.67	1482	**1532**	**1.82**	**1613**	**1588**	**1.97**	**1744**
2100	**1489**	**1.80**	**1595**	**1567**	**1.99**	**1761**	**1626**	**2.16**	**1910**
2200	**1528**	**1.95**	**1726**	**1603**	**2.17**	**1919**	**1666**	**2.37**	**2093**
2300	**1561**	**2.13**	**1884**	**1637**	**2.35**	**2076**	1710	2.54	2272
2400	**1584**	**2.28**	**2015**	1671	2.55	2249	1756	2.70	2467
2500	1633	2.53	2232	1698	2.72	2405	—	—	—
2600	1675	2.77	2436	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1070 to 1460 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.40 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**978**	**0.66**	**700**	**1063**	**0.82**	**771**	**1147**	**0.97**	**891**	**1248**	**1.20**	**1081**	1322	1.33	1190
1900	**1023**	**0.78**	**779**	**1097**	**0.91**	**843**	**1175**	**1.11**	**1006**	**1266**	**1.29**	**1156**	1356	1.47	1310
2000	**1068**	**0.90**	**867**	**1132**	**1.01**	**924**	**1218**	**1.23**	**1106**	1303	1.41	1258	1397	1.52	1353
2100	**1115**	**1.00**	**988**	**1180**	**1.17**	**1056**	**1261**	**1.35**	**1207**	1340	1.53	1361	1428	1.66	1473
2200	**1159**	**1.15**	**1081**	**1214**	**1.28**	**1148**	1310	1.52	1353	1375	1.63	1447	1459	1.80	1595
2300	**1202**	**1.29**	**1140**	**1248**	**1.38**	**1233**	1358	1.69	1499	1410	1.72	1526	1488	1.93	1709
2400	**1237**	**1.41**	**1224**	**1292**	**1.55**	**1378**	1392	1.81	1604	1460	1.90	1683	1532	2.14	1892
2500	**1272**	**1.53**	**1335**	1335	1.71	1517	1427	1.94	1718	1518	2.16	1910	1575	2.35	2076
2600	1320	1.68	1482	1368	1.81	1604	1458	2.06	1823	1562	2.42	2136	1620	2.59	2283
2700	1361	1.82	1595	1400	1.91	1691	1490	2.19	1936	1602	2.64	2326	1666	2.85	2504
2800	1402	1.95	1639	1439	2.08	1840	1543	2.43	2145	1642	2.86	2512	1775	3.62	3290
2900	1446	2.16	1814	1477	2.16	1989	1585	2.65	2335	1753	3.58	3262	—	—	—
3000	1489	2.36	2032	1529	2.52	2223	1598	2.73	2444	1767	3.69	3360	—	—	—

48TF007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1395	1.46	1301	1475	1.56	1387	1542	1.71	1517	1607	1.94	1761	1667	2.16	1967
1900	1430	1.58	1404	1504	1.69	1499	1556	1.82	1613	1621	2.06	1874	1682	2.30	2093
2000	1459	1.67	1482	1532	1.82	1613	1588	1.97	1744	1655	2.23	2029	**1717**	**2.49**	**2266**
2100	1489	1.80	1595	1567	1.99	1761	1626	2.16	1910	**1694**	**2.44**	**2224**	**1758**	**2.73**	**2485**
2200	1528	1.95	1726	1603	2.17	1919	1666	2.37	2093	**1736**	**2.68**	**2441**	—	—	—
2300	1561	2.13	1884	1637	2.35	2076	**1710**	**2.54**	**2272**	**1782**	**2.87**	**2616**	—	—	—
2400	1584	2.28	2015	1671	2.55	2249	**1756**	**2.70**	**2467**	—	—	—	—	—	—
2500	1633	2.53	2232	**1698**	**2.72**	**2405**	1779	3.13	2848	—	—	—	—	—	—
2600	1675	2.77	2436	1768	3.26	2964	—	—	—	—	—	—	—	—	—
2700	1776	3.45	3141	—	—	—	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1300 to 1685 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF008 (7 1/2 TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**514**	**0.55**	**562**	593	0.76	723	662	0.99	907	724	1.22	1097	781	1.78	1318
2300	**521**	**0.57**	**577**	600	0.79	747	668	1.02	932	730	1.26	1131	786	1.50	1335
2400	**536**	**0.63**	**623**	613	0.85	795	680	1.09	989	741	1.34	1199	796	1.59	1413
2500	**551**	**0.69**	**669**	626	0.93	859	693	1.17	1056	753	1.43	1275	808	1.69	1499
2550	**559**	**0.72**	**692**	634	0.97	891	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	**567**	**0.75**	**716**	641	1.00	916	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	**582**	**0.83**	**779**	655	1.08	981	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	598	0.90	835	670	1.17	1056	732	1.43	1275	789	1.71	1517	**842**	**2.00**	**1770**
2900	614	0.98	899	684	1.25	1123	745	1.53	1361	802	1.81	1604	**854**	**2.11**	**1866**
3000	630	1.07	973	699	1.35	1207	759	1.63	1447	815	1.92	1700	**866**	**2.23**	**1971**
3100	646	1.16	1047	714	1.45	1292	773	1.74	1543	828	2.04	1805	**878**	**2.35**	**2076**
3200	662	1.26	1131	729	1.55	1378	787	1.86	1648	**841**	**2.16**	**1910**	891	2.48	2188
3300	679	1.36	1216	744	1.66	1473	801	1.98	1753	**854**	**2.29**	**2023**	904	2.61	2300
3400	695	1.47	1310	759	1.78	1578	816	2.10	1858	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	774	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	**845**	**2.37**	**2093**	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870

48TF008 (7 1/2 TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	841	1.81	1604	**902**	**2.25**	**1989**	939	2.60	2292
2300	**843**	**1.83**	**1621**	**905**	**2.28**	**2015**	943	2.62	2309
2400	**849**	**1.88**	**1665**	**910**	**2.31**	**2041**	952	2.74	2411
2500	**859**	**1.96**	**1735**	**912**	**2.31**	**2050**	963	2.81	2470
2550	**864**	**2.01**	**1779**	**915**	**2.34**	**2067**	968	2.81	2479
2600	**869**	**2.06**	**1823**	**918**	**2.37**	**2093**	973	2.81	2487
2700	**880**	**2.17**	**1919**	927	2.47	2180	976	2.84	2495
2800	**892**	**2.29**	**2023**	938	2.58	2275	983	2.92	2562
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767
3100	926	2.67	2352	972	3.00	2629	1015	3.32	2886
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002
3300	950	2.95	2587	995	3.30	2870	—	—	—
3400	963	3.10	2710	1007	3.45	2987	—	—	—
3500	976	3.25	2831	—	—	—	—	—	—
3600	988	3.41	2956	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard drive range is 590 to 840 rpm. Alternate drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates alternate or field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.40 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**514**	**0.55**	**562**	**593**	**0.76**	**723**	**662**	**0.99**	**907**	**724**	**1.22**	**1097**	**781**	**1.48**	**1318**	**841**	**1.81**	**1604**
2300	**521**	**0.57**	**577**	**600**	**0.79**	**747**	**668**	**1.02**	**932**	**730**	**1.26**	**1131**	**786**	**1.50**	**1335**	**843**	**1.83**	**1621**
2400	**536**	**0.63**	**623**	**613**	**0.85**	**795**	**680**	**1.09**	**989**	**741**	**1.34**	**1199**	**796**	**1.59**	**1413**	**849**	**1.88**	**1665**
2500	**551**	**0.69**	**689**	**626**	**0.93**	**859**	**693**	**1.17**	**1056**	**753**	**1.43**	**1275**	**808**	**1.69**	**1499**	**859**	**1.96**	**1735**
2550	**559**	**0.72**	**692**	**634**	**0.97**	**891**	**700**	**1.21**	**1089**	**759**	**1.48**	**1318**	**814**	**1.74**	**1543**	864	2.01	1779
2600	**567**	**0.75**	**716**	**641**	**1.00**	**916**	**706**	**1.25**	**1123**	**764**	**1.52**	**1353**	**819**	**1.79**	**1587**	869	2.06	1823
2700	**582**	**0.83**	**779**	**655**	**1.08**	**981**	**719**	**1.34**	**1199**	**776**	**1.61**	**1430**	**831**	**1.89**	**1674**	880	2.17	1919
2800	**598**	**0.90**	**835**	**670**	**1.17**	**1056**	**732**	**1.43**	**1275**	**789**	**1.71**	**1517**	**842**	**2.00**	**1770**	892	2.29	2023
2900	**614**	**0.98**	**899**	**684**	**1.25**	**1123**	**745**	**1.53**	**1361**	**802**	**1.81**	**1604**	**854**	**2.11**	**1866**	903	2.42	2136
3000	**630**	**1.07**	**973**	**699**	**1.35**	**1207**	**759**	**1.63**	**1447**	**815**	**1.92**	**1700**	866	2.23	1971	915	2.54	2240
3100	**646**	**1.16**	**1047**	**714**	**1.45**	**1292**	**773**	**1.74**	**1543**	**828**	**2.04**	**1805**	878	2.35	2076	926	2.67	2352
3200	**662**	**1.26**	**1131**	**729**	**1.55**	**1378**	**787**	**1.86**	**1648**	**841**	**2.16**	**1910**	891	2.48	2188	938	2.81	2470
3300	**697**	**1.36**	**1216**	**744**	**1.66**	**1473**	**801**	**1.98**	**1753**	**854**	**2.29**	**2023**	904	2.61	2300	950	2.95	2587
3400	**695**	**1.47**	**1310**	**759**	**1.79**	**1578**	**816**	**2.10**	**1858**	867	2.42	2136	917	2.75	2420	963	3.10	2710
3500	**712**	**1.59**	**1413**	**774**	**1.90**	**1683**	**830**	**2.23**	**1971**	881	2.56	2257	930	2.90	2546	976	3.25	2831
3600	**729**	**1.71**	**1517**	**780**	**2.03**	**1796**	**845**	**2.37**	**2093**	895	2.71	2386	943	3.05	2670	988	3.41	2956
3700	**745**	**1.84**	**1630**	**805**	**2.17**	**1919**	**860**	**2.52**	**2223**	909	2.87	2521	956	3.22	2807	1019	3.90	3431
3750	**754**	**1.91**	**1691**	**813**	**2.24**	**1980**	868	2.59	2283	917	2.95	2587	963	3.30	2870	1026	4.00	3517

48TF008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	902	2.25	1989	939	2.60	2292	979	2.94	2589	1015	3.29	2892
2300	905	2.28	2015	943	2.62	2309	983	2.96	2609	1020	3.31	2914
2400	910	2.31	2041	952	2.74	2411	992	3.10	2729	1029	3.46	3048
2500	912	2.31	2050	963	2.81	2470	1004	3.18	2798	1041	3.55	3126
2550	915	2.34	2067	968	2.81	2479	1009	3.18	2798	1047	3.55	3126
2600	918	2.37	2093	973	2.81	2487	1014	3.18	2798	1052	3.55	3126
2700	927	2.47	2180	976	2.84	2495	1017	3.21	2828	1055	3.59	3159
2800	938	2.58	2275	983	2.92	2562	1024	3.30	2908	1063	3.69	3248
2900	949	2.71	2386	993	3.03	2653	1035	3.43	3017	1074	3.83	3370
3000	961	2.85	2504	1003	3.17	2767	1045	3.59	3157	1084	4.01	3526
3100	972	3.00	2629	1015	3.32	2886	1058	3.76	3306	1097	4.20	3693
3200	983	3.14	2743	1026	3.47	3002	1069	3.83	3456	—	—	—
3300	995	3.30	2870	1043	3.80	3341	—	—	—	—	—	—
3400	1007	3.45	2987	1056	3.97	3493	—	—	—	—	—	—
3500	1030	3.82	3362	—	—	—	—	—	—	—	—	—
3600	1043	4.01	3528	—	—	—	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 860 to 1080 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**559**	**0.72**	**692**	**634**	**0.97**	**891**	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	**567**	**0.75**	**716**	**641**	**1.00**	**916**	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	**582**	**0.83**	**779**	**655**	**1.08**	**981**	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	**598**	**0.90**	**835**	**670**	**1.17**	**1056**	732	1.43	1275	789	1.71	1517	842	2.00	1770
2900	**614**	**0.98**	**899**	**684**	**1.25**	**1123**	745	1.53	1361	802	1.81	1604	854	2.11	1866
3000	**630**	**1.07**	**973**	690	1.35	1207	759	1.63	1447	815	1.92	1700	866	2.23	1971
3100	**646**	**1.16**	**1047**	714	1.45	1292	773	1.74	1543	828	2.04	1805	878	2.35	2076
3200	**662**	**1.26**	**1131**	729	1.55	1378	787	1.86	1648	841	2.16	1910	891	2.48	2188
3300	**679**	**1.36**	**1216**	744	1.66	1473	801	1.98	1753	854	2.29	2023	904	2.61	2300
3400	695	1.47	1310	759	1.78	1578	816	2.10	1858	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	774	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	845	2.37	2093	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870
3800	762	1.98	1753	821	2.31	2041	875	2.66	2343	924	3.03	2653	970	3.38	2933
3900	779	2.12	1875	836	2.46	2171	890	2.82	2479	938	3.19	2783	—	—	—
4000	796	2.27	2006	852	2.61	2300	905	2.98	2612	953	3.37	2925	—	—	—
4100	813	2.42	2136	868	2.78	2445	920	3.15	2751	—	—	—	—	—	—
4200	830	2.59	2283	884	2.95	2587	935	3.33	2894	—	—	—	—	—	—
4250	839	2.68	2360	890	3.04	2661	—	—	—	—	—	—	—	—	—

48TF009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767
3100	926	2.67	2352	972	3.00	2629	1016	3.32	2886
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002
3300	950	2.95	2587	995	3.30	2870	—	—	—
3400	963	3.10	2710	1007	3.45	2987	—	—	—
3500	976	3.25	2831	—	—	—	—	—	—
3600	988	3.41	2956	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—
3800	—	—	—	—	—	—	—	—	—
3900	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	559	0.72	692	634	0.97	891	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	567	0.75	716	641	1.00	916	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	582	0.83	779	655	1.08	981	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	598	0.90	835	670	1.17	1056	732	1.43	1275	789	1.71	1517	842	2.00	1770
2900	614	0.98	899	684	1.25	1123	745	1.53	1361	802	1.81	1604	854	2.11	1866
3000	630	1.07	973	690	1.35	1207	759	1.63	1447	816	1.92	1700	866	2.23	1971
3100	646	1.16	1047	714	1.45	1292	773	1.74	1543	828	2.04	1805	878	2.35	2076
3200	662	1.26	1131	729	1.55	1378	787	1.86	1648	841	2.18	1910	891	2.48	2188
3300	679	1.36	1216	744	1.66	1473	801	1.98	1753	854	2.29	2023	904	2.61	2300
3400	695	1.47	1310	759	1.76	1578	816	2.10	1858	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	744	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	845	2.37	2093	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870
3800	762	1.98	1753	821	2.31	2041	875	2.66	2343	924	3.03	2653	970	3.38	2933
3900	779	2.12	1875	836	2.46	2171	890	2.82	2479	938	3.19	2783	981	3.65	3209
4000	796	2.27	2006	852	2.61	2300	905	2.98	2612	953	3.37	2925	996	3.85	3390
4100	813	2.42	2136	868	2.78	2445	920	3.15	2751	974	3.74	3294	—	—	—
4200	830	2.59	2283	884	2.95	2587	935	3.33	2894	990	3.96	3482	—	—	—
4250	839	2.68	2360	890	3.04	2661	965	3.88	3412	—	—	—	—	—	—

48TF009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479	991	3.02	2654	1012	3.21	2827
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487	996	3.02	2654	1017	3.21	2827
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495	999	3.05	2682	1021	3.25	2857
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562	1006	3.13	2758	1028	3.34	2938
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653	1017	3.25	2862	1038	3.46	3048
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767	1027	3.40	2994	1049	3.62	3189
3100	926	2.67	2352	972	3.00	2629	1016	3.32	2886	1040	3.65	3136	1062	3.80	3340
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002	1050	3.72	3277	1073	3.97	3491
3300	950	2.95	2587	995	3.30	2870	1022	3.58	3146	1046	3.84	3377	1069	4.09	3597
3400	963	3.10	2710	1007	3.45	2987	1034	3.74	3289	1059	4.01	3530	—	—	—
3500	976	3.25	2831	1007	3.56	3137	1034	3.86	3399	1058	4.15	3648	—	—	—
3600	988	3.41	2956	1019	3.74	3292	1047	4.05	3566	—	—	—	—	—	—
3700	992	3.59	3161	1023	3.94	3467	—	—	—	—	—	—	—	—	—
3750	999	3.68	3240	1030	4.04	3554	—	—	—	—	—	—	—	—	—
3800	1006	3.77	3318	1038	4.14	3640	—	—	—	—	—	—	—	—	—
3900	1017	4.07	3580	—	—	—	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 860 to 1080 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF012 (10 TONS) — STANDARD MOTOR AND ALTERNATE MOTOR*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**592**	**0.76**	**723**	**661**	**0.93**	**859**	722	1.09	989	779	1.26	1131	829	1.42	1267	880	1.58	1404
3100	**607**	**0.83**	**779**	**676**	**1.01**	**924**	734	1.17	1056	791	1.34	1199	840	1.51	1344	890	1.68	1491
3200	**622**	**0.90**	**835**	690	1.09	989	746	1.25	1123	803	1.43	1275	852	1.60	1422	900	1.77	1569
3300	**638**	**0.98**	**899**	705	1.17	1056	759	1.33	1190	815	1.52	1353	864	1.70	1508	910	1.88	1665
3400	**653**	**1.06**	**965**	719	1.26	1131	772	1.43	1275	826	1.62	1439	876	1.81	1604	921	1.98	1753
3500	**669**	**1.15**	**1039**	733	1.35	1207	786	1.53	1361	838	1.72	1526	888	1.91	1691	933	2.10	1858
3600	**684**	**1.24**	**1114**	747	1.44	1284	800	1.64	1456	850	1.82	1613	900	2.03	1796	945	2.22	2014
3700	700	1.33	1190	760	1.54	1370	814	1.75	1552	863	1.92	1700	912	2.14	1892	957	2.34	2117
3800	715	1.43	1275	774	1.64	1456	828	1.86	1648	875	2.04	1805	924	2.26	1997	969	2.47	2230
3900	731	1.54	1370	787	1.74	1543	843	1.98	1753	888	2.16	1910	936	2.38	2151	981	2.60	2344
4000	747	1.64	1456	801	1.85	1639	857	2.10	1858	902	2.30	2032	948	2.51	2265	993	2.74	2469
4100	763	1.76	1560	816	1.97	1744	872	2.23	1971	916	2.44	2203	960	2.64	2380	1005	2.88	2596
4200	778	1.88	1665	831	2.10	1884	886	2.36	2084	929	2.58	2326	972	2.78	2505	1016	3.03	2735
4300	794	2.00	1770	846	2.23	1971	900	2.50	2256	943	2.73	2460	985	2.93	2642	1028	3.17	2866
4400	810	2.13	1884	861	2.37	2093	913	2.64	2380	958	2.89	2605	999	3.09	2791	1040	3.32	3010
4500	826	2.27	2006	876	2.52	2273	927	2.78	2505	973	3.04	2744	1012	3.26	2952	1051	3.50	3159
4600	842	2.41	2177	892	2.67	2406	940	2.92	2633	987	3.21	2904	1022	3.41	3098	1062	3.66	3309
4700	858	2.55	2300	907	2.83	2551	954	3.08	2782	1002	3.38	3068	1034	3.58	3258	1074	3.83	3463
4800	874	2.70	2433	922	2.99	2698	968	3.24	2933	1005	3.56	3244	1046	3.75	3423	1085	4.00	3621
4900	890	2.86	2578	938	3.16	2857	982	3.42	3096	1008	3.75	3421	1058	3.93	3593	1097	4.18	3784
5000	906	3.03	2735	953	3.33	3020	996	3.59	3259	1021	3.94	3606	1070	4.11	3768	1108	4.36	3950

48TF012 (10 TONS) — STANDARD MOTOR AND ALTERNATE MOTOR* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)					
	1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**924**	**1.73**	**1534**	970	1.89	1736
3100	935	1.84	1695	977	2.00	1828
3200	946	1.95	1786	987	2.11	1920
3300	957	2.06	1878	998	2.23	2022
3400	967	2.17	1971	1009	2.35	2125
3500	976	2.29	2074	1020	2.48	2238
3600	986	2.41	2177	1030	2.61	2353
3700	998	2.54	2291	1039	2.74	2469
3800	1010	2.67	2406	1049	2.87	2587
3900	1022	2.81	2533	1060	3.02	2726
4000	1034	2.96	2670	1072	3.17	2866
4100	1046	3.11	2810	1084	3.32	3010
4200	1058	3.26	2952	1092	3.47	3154
4300	1067	3.42	3080	1103	3.63	3307
4400	1078	3.58	3225	1113	3.79	3465
4500	1089	3.75	3373	1123	3.96	3629
4600	1100	3.92	3526	**1134**	**4.13**	**3798**
4700	1111	4.10	3683	**1144**	**4.31**	**3972**
4800	1122	4.28	3843	**1155**	**4.49**	**4152**
4900	**1133**	**4.47**	**4008**	**1165**	**4.67**	**4337**
5000	**1144**	**4.66**	**4177**	**1175**	**4.86**	**4528**

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard drive range is 685 to 935 rpm. Alternate motor drive range is 835 to 1085 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. [ ] indicates high-static motor and drive are required. See high-static data on next page.
3. **Boldface** indicates field-supplied motor and drive are required.
4. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
5. Maximum continuous bhp is 2.4 for the standard motor, and 2.9 for the alternate motor. Maximum continuous watts are 2120 for the standard motor, and 2615 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
7. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF012 (10 TONS) — HIGH-STATIC MOTOR*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**592**	**0.76**	**723**	**661**	**0.93**	**859**	**722**	**1.09**	**989**	**779**	**1.26**	**1131**	**829**	**1.42**	**1267**	880	1.58	1404
3100	**607**	**0.83**	**779**	**676**	**1.01**	**924**	**734**	**1.17**	**1056**	**791**	**1.34**	**1199**	840	1.51	1344	890	1.68	1491
3200	**622**	**0.90**	**835**	**690**	**1.09**	**989**	**746**	**1.25**	**1123**	**803**	**1.43**	**1275**	852	1.60	1422	900	1.77	1569
3300	**638**	**0.98**	**899**	**705**	**1.17**	**1056**	**759**	**1.33**	**1190**	**815**	**1.52**	**1353**	864	1.70	1508	910	1.88	1665
3400	**653**	**1.06**	**965**	**719**	**1.26**	**1131**	**772**	**1.43**	**1275**	**826**	**1.62**	**1439**	876	1.81	1604	921	1.98	1753
3500	**669**	**1.15**	**1039**	**733**	**1.35**	**1207**	**786**	**1.53**	**1361**	838	1.72	1526	888	1.91	1691	933	2.10	1858
3600	**684**	**1.24**	**1114**	**747**	**1.44**	**1284**	**800**	**1.64**	**1456**	850	1.82	1613	900	2.03	1796	945	2.22	2014
3700	**700**	**1.33**	**1190**	**760**	**1.54**	**1370**	**814**	**1.75**	**1552**	863	1.92	1700	912	2.14	1892	957	2.34	2117
3800	**715**	**1.43**	**1275**	**774**	**1.64**	**1456**	**828**	**1.86**	**1648**	875	2.04	1805	924	2.26	1997	969	2.47	2230
3900	**731**	**1.54**	**1370**	**787**	**1.74**	**1543**	843	1.98	1753	888	2.16	1910	936	2.38	2151	981	2.60	2344
4000	**747**	**1.64**	**1456**	**801**	**1.85**	**1639**	857	2.10	1858	902	2.30	2032	948	2.51	2265	993	2.74	2469
4100	**763**	**1.76**	**1560**	**816**	**1.97**	**1744**	872	2.23	1971	916	2.44	2203	960	2.64	2380	1005	2.88	2596
4200	**778**	**1.88**	**1665**	831	2.10	1884	886	2.36	2084	929	2.58	2326	972	2.78	2505	1016	3.03	2735
4300	**794**	**2.00**	**1770**	846	2.23	1971	900	2.50	2256	943	2.73	2460	985	2.93	2642	1028	3.17	2866
4400	**810**	**2.13**	**1884**	861	2.37	2093	913	2.64	2380	958	2.89	2605	999	3.09	2791	1040	3.32	3010
4500	**826**	**2.27**	**2006**	876	2.52	2273	927	2.78	2505	973	3.04	2744	1012	3.26	2952	1051	3.50	3159
4600	842	2.41	2177	892	2.67	2406	940	2.92	2633	987	3.21	2904	1022	3.41	3098	1062	3.66	3309
4700	858	2.55	2300	907	2.83	2551	954	3.08	2782	1002	3.38	3068	1034	3.58	3258	1074	3.83	3463
4800	874	2.70	2433	922	2.99	2698	968	3.24	2933	1005	3.56	3244	1046	3.75	3423	1085	4.00	3621
4900	890	2.86	2578	938	3.16	2857	982	3.42	3096	1008	3.75	3421	1058	3.93	3593	1097	4.18	3784
5000	906	3.03	2735	953	3.33	3020	996	3.59	3259	1021	3.94	3606	1070	4.11	3768	1108	4.36	3950

48TF012 (10 TONS) — HIGH-STATIC MOTOR* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	924	1.73	1534	970	1.89	1736	1019	2.00	1828	1066	2.30	2082
3100	935	1.84	1695	977	2.00	1828	1026	2.17	1971	1070	2.44	2203
3200	946	1.95	1786	987	2.11	1920	1029	2.28	2065	1075	2.51	2265
3300	957	2.06	1878	998	2.23	2022	1037	2.40	2169	1082	2.58	2326
3400	967	2.17	1971	1009	2.35	2125	1047	2.53	2282	1087	2.70	2433
3500	976	2.29	2074	1020	2.48	2238	1058	2.66	2397	1095	2.84	2560
3600	986	2.41	2177	1030	2.61	2353	1069	2.80	2523	1106	2.98	2688
3700	998	2.54	2291	1039	2.74	2469	1081	2.94	2651	1117	3.13	2829
3800	1010	2.67	2406	1049	2.87	2587	1091	3.08	2782	1128	3.29	2981
3900	1022	2.81	2533	1060	3.02	2726	1100	3.23	2923	1130	3.46	3143
4000	1034	2.93	2670	1072	3.17	2866	1110	3.38	3068	**1138**	**3.65**	**3320**
4100	1046	3.11	2810	1084	3.32	3010	1118	3.52	3208	**1146**	**3.84**	**3508**
4200	1058	3.26	2952	1092	3.47	3154	1127	3.68	3357	**1154**	**4.05**	**3709**
4300	1067	3.42	3080	1103	3.63	3307	**1137**	**3.83**	**3510**	**1161**	**4.27**	**3922**
4400	1078	3.58	3225	1113	3.79	3465	**1146**	**3.99**	**3668**	**1169**	**4.51**	**4147**
4500	1089	3.75	3373	1123	3.96	3629	**1156**	**4.15**	**3830**	**1177**	**4.75**	**4385**
4600	1100	3.92	3526	**1134**	**4.13**	**3798**	**1165**	**4.31**	**3996**	1185	5.01	4635
4700	1111	4.10	3683	**1144**	**4.31**	**3972**	**1175**	**4.48**	**4166**	1192	5.28	4896
4800	1122	4.28	3843	**1155**	**4.49**	**4152**	**1184**	**4.64**	**4341**	1200	5.56	5171
4900	**1133**	**4.47**	**4008**	**1165**	**4.67**	**4337**	1194	4.81	4519	1208	5.85	5457
5000	**1144**	**4.66**	**4177**	1175	4.86	4528	1203	4.99	4702	1215	6.15	5755

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*High-static motor drive range is 830 to 1130 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 5.25 for the high-static motor. Maximum continuous watts are 4400 for the high-static motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

48TF014 (12½ TONS)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	737	1.41	1300	798	1.64	1486	854	1.84	1658	909	2.12	1893	961	2.35	2097	1014	2.61	2325
3800	745	1.46	1340	805	1.69	1531	861	1.89	1700	915	2.17	1940	967	2.41	2149	1019	2.67	2378
3900	761	1.56	1423	820	1.80	1624	875	2.01	1802	928	2.29	2044	979	2.55	2272	1029	2.80	2494
4000	777	1.67	1514	836	1.92	1725	889	2.14	1914	941	2.40	2140	991	2.68	2387	1040	2.94	2620
4100	793	1.79	1615	851	2.05	1836	904	2.27	2027	955	2.52	2246	1004	2.82	2512	1052	3.08	2746
4200	810	1.91	1717	867	2.18	1948	918	2.41	2149	968	2.65	2361	1017	2.96	2638	1064	3.23	2882
4300	826	2.04	1828	883	2.32	2070	933	2.55	2272	982	2.79	2485	1030	3.11	2773	1076	3.40	3037
4400	842	2.17	1940	898	2.46	2193	948	2.70	2405	996	2.93	2611	1043	3.25	2901	1088	3.56	3184
4500	859	2.31	2061	914	2.60	2316	962	2.85	2539	1010	3.09	2755	1056	3.40	3037	**1101**	**3.73**	**3341**
4600	876	2.45	2184	930	2.76	2459	977	3.01	2683	1024	3.26	2910	1070	3.55	3175	**1114**	**3.90**	**3498**
4700	892	2.60	2316	945	2.91	2593	992	3.18	2837	1039	3.43	3065	**1083**	**3.71**	**3322**	**1126**	**4.07**	**3655**
4800	909	2.77	2468	961	3.07	2737	1008	3.36	3001	1053	3.61	3230	**1097**	**3.88**	**3479**	**1140**	**4.25**	**3822**
4900	926	2.93	2611	977	3.24	2891	1024	3.54	3166	**1068**	**3.80**	**3405**	**1111**	**4.06**	**3646**	**1153**	**4.41**	**3971**
5000	942	3.11	2773	993	3.41	3047	**1039**	**3.73**	**3341**	**1080**	**3.99**	**3581**	**1125**	**4.25**	**3822**	**1166**	**4.59**	**4139**
5100	959	3.29	2937	1009	3.60	3221	**1055**	**3.92**	**3516**	**1097**	**4.19**	**3767**	**1139**	**4.46**	**4018**	**1180**	**4.78**	**4316**
5200	976	3.47	3101	**1025**	**3.78**	**3387**	**1071**	**4.12**	**3702**	**1112**	**4.40**	**3962**	**1153**	**4.67**	**4214**	1194	4.98	4503
5300	993	3.67	3285	**1041**	**3.98**	**3572**	**1086**	**4.33**	**3897**	**1127**	**4.61**	**4158**	1168	4.90	4428	1208	5.19	4698
5400	**1010**	**3.87**	**3470**	**1057**	**4.18**	**3757**	**1102**	**4.54**	**4093**	**1142**	**4.84**	**4372**	1182	5.13	4642	—	—	—
5500	**1027**	**4.07**	**3655**	**1073**	**4.39**	**3953**	**1118**	**4.76**	**4298**	1157	5.07	4586	—	—	—	—	—	—
5600	**1043**	**4.29**	**3860**	**1090**	**4.61**	**4158**	1133	4.99	4512	—	—	—	—	—	—	—	—	—
5700	**1060**	**4.51**	**4065**	**1106**	**4.83**	**4363**	1149	5.22	4726	—	—	—	—	—	—	—	—	—
5800	**1077**	**4.74**	**4279**	1122	5.07	4586	—	—	—	—	—	—	—	—	—	—	—	—
5900	1094	4.98	4503	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6000	1111	5.22	4726	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

48TF014 (12½ TONS)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	1065	2.87	2557	1113	3.12	2783	1158	3.36	2997	1197	3.56	3180
3800	1070	2.94	2620	1118	3.19	2846	1163	3.44	3074	1203	3.65	3267
3900	1079	3.07	2737	1128	3.34	2983	1173	3.60	3221	**1214**	**3.83**	**3433**
4000	1089	3.22	2873	1137	3.49	3120	**1183**	**3.76**	**3368**	**1225**	**4.00**	**3590**
4100	1100	3.36	3001	1147	3.65	3267	**1193**	**3.93**	**3525**	**1236**	**4.19**	**3767**
4200	1110	3.51	3138	**1157**	**3.81**	**3414**	**1202**	**4.09**	**3674**	**1245**	**4.38**	**3943**
4300	1121	3.67	3285	**1167**	**3.97**	**3562**	**1212**	**4.27**	**3841**	**1255**	**4.56**	**4111**
4400	**1133**	**3.84**	**3442**	**1178**	**4.14**	**3720**	**1222**	**4.44**	**3999**	**1265**	**4.74**	**4279**
4500	**1144**	**4.00**	**3590**	**1188**	**4.31**	**3878**	**1232**	**4.62**	**4167**	1274	4.93	4456
4600	**1157**	**4.19**	**3767**	**1199**	**4.49**	**4046**	**1242**	**4.81**	**4344**	1284	5.13	4642
4700	**1169**	**4.38**	**3943**	**1210**	**4.68**	**4223**	1252	5.00	4521	—	—	—
4800	**1181**	**4.58**	**4130**	**1222**	**4.87**	**4400**	1263	5.20	4707	—	—	—
4900	**1194**	**4.77**	**4307**	1234	5.09	4605	—	—	—	—	—	—
5000	1207	4.97	4493	—	—	—	—	—	—	—	—	—
5100	1220	5.18	4689	—	—	—	—	—	—	—	—	—
5200	—	—	—	—	—	—	—	—	—	—	—	—
5300	—	—	—	—	—	—	—	—	—	—	—	—
5400	—	—	—	—	—	—	—	—	—	—	—	—
5500	—	—	—	—	—	—	—	—	—	—	—	—
5600	—	—	—	—	—	—	—	—	—	—	—	—
5700	—	—	—	—	—	—	—	—	—	—	—	—
5800	—	—	—	—	—	—	—	—	—	—	—	—
5900	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—
6100	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard drive range is 860 to 1080 rpm. Alternate motor drive range is 900 to 1260 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates alternate motor and drive are required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.70 for the standard motor and 5.25 for the alternate motor. Maximum continuous watts are 3313 for the standard motor and 4400 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS

48TF004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
900	0.54	0.21	253	0.57	0.23	277	0.55	0.26	307	0.60	0.31	363
1000	0.49	0.23	270	0.51	0.25	292	0.52	0.27	321	0.53	0.32	374
1100	0.43	0.24	287	0.45	0.26	307	0.46	0.28	335	0.49	0.33	385
1200	0.39	0.26	304	0.40	0.27	323	0.38	0.29	349	0.43	0.34	397
1300	0.33	0.27	321	0.35	0.29	338	0.35	0.31	364	0.36	0.34	408
1400	0.26	0.29	338	0.28	0.30	354	0.29	0.32	378	—	—	—
1500	0.21	0.30	355	0.23	0.31	369	0.24	0.33	392	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for Additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TF004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**526**	**0.06**	**70**	**584**	**0.08**	**99**	**656**	**0.12**	**139**	**734**	**0.22**	**219**	818	0.25	269	875	0.27	269
1000	**570**	**0.09**	**109**	**627**	**0.13**	**149**	**738**	**0.19**	**189**	800	0.26	259	848	0.29	288	895	0.31	308
1100	**614**	**0.13**	**149**	**670**	**0.16**	**189**	**758**	**0.23**	**229**	812	0.29	288	863	0.32	308	914	0.35	348
1200	**658**	**0.16**	**189**	**710**	**0.23**	**229**	780	0.28	279	840	0.32	318	889	0.36	358	938	0.40	398
1300	**703**	**0.20**	**239**	**752**	**0.27**	**269**	808	0.32	318	868	0.37	368	916	0.41	408	963	0.45	448
1400	**725**	**0.29**	**288**	776	0.31	308	845	0.38	378	891	0.42	418	937	0.47	467	983	0.51	507
1500	**755**	**0.33**	**328**	816	0.38	378	870	0.43	428	924	0.48	477	969	0.53	527	1014	0.58	577

48TF004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	924	0.32	308	953	0.35	348	989	0.38	388	**1028**	**0.42**	**438**	**1074**	**0.45**	**487**	**1120**	**0.50**	**537**
1000	936	0.35	348	977	0.39	388	**1020**	**0.44**	**438**	**1064**	**0.48**	**477**	**1124**	**0.52**	**537**	**1185**	**0.55**	**597**
1100	960	0.39	388	**1005**	**0.43**	**428**	**1052**	**0.49**	**487**	**1100**	**0.52**	**527**	**1163**	**0.56**	**587**	**1225**	**0.60**	**647**
1200	988	0.45	448	**1038**	**0.50**	**497**	**1076**	**0.53**	**527**	**1136**	**0.59**	**577**	**1201**	**0.61**	**647**	**1266**	**0.64**	**716**
1300	**1012**	**0.51**	**507**	**1061**	**0.56**	**557**	**1094**	**0.61**	**607**	**1172**	**0.65**	**647**	**1239**	**0.69**	**716**	**1306**	**0.72**	**786**
1400	**1027**	**0.56**	**557**	**1071**	**0.60**	**597**	**1108**	**0.67**	**666**	**1208**	**0.70**	**706**	**1278**	**0.75**	**786**	**1347**	**0.79**	**865**
1500	**1056**	**0.63**	**627**	**1097**	**0.68**	**676**	**1117**	**0.70**	**696**	**1245**	**0.74**	**776**	**1315**	**0.80**	**865**	**1385**	**0.85**	**955**

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 760 to 1000 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
3. Maximum continuous bhp is 1.00 and maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
4. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
5. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**584**	**0.08**	**99**	**734**	**0.22**	**219**	**875**	**0.27**	**269**	**953**	**0.36**	**348**	**1028**	**0.42**	**438**
1000	**627**	**0.13**	**149**	**800**	**0.26**	**259**	**895**	**0.31**	**308**	**977**	**0.39**	**388**	**1064**	**0.48**	**477**
1100	**670**	**0.16**	**189**	**812**	**0.29**	**288**	**914**	**0.35**	**348**	**1005**	**0.43**	**428**	1100	0.52	527
1200	**710**	**0.23**	**229**	**840**	**0.32**	**318**	**938**	**0.40**	**398**	**1038**	**0.50**	**497**	1136	0.59	577
1300	**752**	**0.27**	**269**	**868**	**0.37**	**368**	**963**	**0.45**	**448**	**1061**	**0.56**	**557**	1172	0.65	647
1400	**776**	**0.31**	**308**	**891**	**0.42**	**418**	**983**	**0.51**	**507**	**1071**	**0.60**	**597**	1208	0.70	706
1500	**816**	**0.38**	**378**	**924**	**0.48**	**477**	**1014**	**0.58**	**577**	1097	0.68	676	1245	0.74	776

48TF004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1120	0.54	537	1155	0.59	589	1186	0.64	639	1215	0.69	685	1240	0.73	730
1000	1185	0.60	597	1222	0.66	655	1255	0.71	709	1285	0.77	761	1312	0.82	811
1100	1225	0.65	647	1263	0.71	709	1298	0.77	769	1328	0.83	825	1357	0.88	879
1200	1266	0.72	716	1306	0.79	786	1341	0.86	851	1373	0.92	914	1402	0.98	973
1300	1306	0.79	786	1347	0.87	862	1383	0.94	934	1416	1.01	1003	1446	1.07	1068
1400	1347	0.87	865	1389	0.95	950	1427	1.03	1029	**1461**	**1.11**	**1104**	**1492**	**1.18**	**1176**
1500	1385	0.96	955	1428	1.05	1048	**1467**	**1.14**	**1135**	**1502**	**1.22**	**1218**	**1534**	**1.30**	**1298**

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1075 to 1455 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
3. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
4. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
5. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1200	0.75	0.41	458	0.81	0.45	506	0.87	0.51	572	0.92	0.56	632
1300	0.68	0.42	471	0.74	0.46	521	0.79	0.52	589	0.85	0.58	651
1400	0.60	0.45	503	0.66	0.49	556	0.71	0.54	616	0.77	0.60	681
1500	0.51	0.47	536	0.58	0.52	593	0.64	0.56	631	0.70	0.62	698
1600	0.42	0.49	557	0.49	0.54	616	0.56	0.58	654	0.63	0.64	723
1700	0.32	0.52	584	0.39	0.57	646	0.48	0.60	678	0.55	0.66	750
1800	0.21	0.54	610	0.29	0.60	674	0.41	0.62	698	0.48	0.68	772
1900	0.09	0.56	629	0.18	0.62	696	0.33	0.64	720	0.41	0.70	796
2000	—	—	—	0.06	0.65	731	0.26	0.66	744	0.33	0.73	823

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for Additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

48TF005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**569**	**0.18**	**189**	**641**	**0.23**	**242**	**701**	**0.29**	**299**	**761**	**0.34**	**357**	859	0.46	483	901	0.52	546	943	0.58	609
1300	**604**	**0.22**	**231**	**673**	**0.28**	**294**	**731**	**0.34**	**352**	**788**	**0.39**	**410**	887	0.52	546	928	0.59	615	968	0.65	683
1400	**640**	**0.27**	**284**	**705**	**0.33**	**347**	**761**	**0.39**	**410**	**817**	**0.45**	**473**	914	0.59	620	955	0.66	688	996	0.72	757
1500	**676**	**0.32**	**336**	**738**	**0.38**	**399**	**793**	**0.45**	**468**	847	0.51	536	940	0.65	683	982	0.73	767	1024	0.81	851
1600	**713**	**0.38**	**399**	**772**	**0.44**	**462**	**825**	**0.51**	**536**	877	0.58	609	967	0.73	767	1009	0.81	851	1051	0.89	935
1700	**750**	**0.45**	**473**	**806**	**0.51**	**536**	857	0.59	615	908	0.66	693	997	0.81	851	1037	0.90	940	1077	1.01	1030
1800	**788**	**0.52**	**546**	841	0.59	620	890	0.67	704	939	0.75	788	1026	0.91	956	1065	1.01	1040	1104	1.07	1124
1900	**826**	**0.60**	**630**	876	0.68	714	924	0.76	799	971	0.84	883	1056	1.01	1061	1094	1.10	1151	1132	1.18	1240
2000	864	0.70	735	912	0.77	809	958	0.86	898	1004	0.94	988	1087	1.12	1177	1125	1.21	1271	1162	1.30	1366

48TF005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.9			1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	987	0.64	652	1030	0.70	695	1068	0.79	792	1106	0.87	889	1134	0.98	998	1189	1.12	1138	1245	1.21	1358
1300	1006	0.71	709	1044	0.77	736	1086	0.84	833	1128	0.91	930	1183	1.10	1052	1226	1.23	1215	1297	1.35	1406
1400	1033	0.79	797	1069	0.86	838	1104	0.93	925	1139	1.01	1012	1218	1.14	1090	1286	1.34	1282	1320	1.48	1463
1500	1060	0.88	891	1095	0.95	930	1129	1.02	1022	1162	1.09	1114	1228	1.24	1186	1303	1.40	1339	1343	1.60	1530
1600	1087	1.01	1001	1123	1.05	1073	1156	1.13	1150	1185	1.20	1226	1250	1.35	1291	1319	1.51	1444	1382	1.68	1607
1700	1114	1.07	1108	1151	1.15	1185	1183	1.23	1262	1215	1.31	1339	1276	1.48	1415	1334	1.64	1569	1398	1.80	1722
1800	1141	1.17	1221	1178	1.26	1318	1211	1.35	1390	1243	1.43	1461	1303	1.61	1540	1359	1.78	1702	1418	1.95	1865
1900	1168	1.28	1371	1204	1.37	1502	1238	1.47	1548	1271	1.56	1594	1330	1.74	1664	1386	1.93	1846	1439	2.11	2018
2000	1197	1.39	1485	1231	1.48	1604	1265	1.59	1666	1298	1.69	1727	1358	1.89	1808	1413	2.08	1989	1466	2.27	2171

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 835 to 1185 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▒▒▒ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 1.00 and the maximum continuous watts are 1000. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**641**	**0.23**	**242**	**761**	**0.34**	**357**	**859**	**0.46**	**483**	**943**	**0.58**	**609**	**1030**	**0.70**	**695**
1300	**673**	**0.28**	**294**	**788**	**0.39**	**410**	**887**	**0.52**	**546**	**968**	**0.65**	**683**	**1044**	**0.77**	**736**
1400	**705**	**0.33**	**347**	**817**	**0.45**	**473**	**914**	**0.59**	**620**	**996**	**0.72**	**757**	**1069**	**0.86**	**838**
1500	**738**	**0.38**	**399**	**847**	**0.51**	**536**	**940**	**0.65**	**683**	**1024**	**0.81**	**851**	1095	0.95	930
1600	**772**	**0.44**	**462**	**877**	**0.58**	**609**	**967**	**0.73**	**767**	**1051**	**0.89**	**935**	1123	1.05	1073
1700	**806**	**0.51**	**536**	**908**	**0.66**	**693**	**997**	**0.81**	**851**	1077	1.01	1030	1151	1.15	1185
1800	**841**	**0.59**	**620**	**939**	**0.75**	**789**	**1026**	**0.91**	**956**	1104	1.07	1124	1178	1.26	1318
1900	**876**	**0.68**	**714**	**971**	**0.84**	**883**	**1056**	**1.01**	**1061**	1132	1.18	1240	1204	1.37	1502
2000	**912**	**0.77**	**809**	**1004**	**0.94**	**988**	1087	1.12	1177	1162	1.30	1366	1231	1.48	1604

48TF005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1106	0.87	889	1134	0.98	998	1189	1.12	1138	1245	1.21	1358	1292	1.35	1345
1300	1128	0.91	930	1183	1.10	1052	1226	1.23	1215	1297	1.35	1406	1346	1.51	1500
1400	1139	1.01	1012	1218	1.14	1090	1286	1.34	1282	1320	1.48	1463	1370	1.65	1645
1500	1162	1.09	1114	1228	1.24	1186	1303	1.40	1339	1343	1.60	1530	1393	1.79	1778
1600	1185	1.20	1226	1250	1.35	1291	1319	1.51	1444	1382	1.68	1607	1434	1.88	1867
1700	1215	1.31	1339	1276	1.48	1415	1334	1.64	1569	1389	1.80	1722	1451	2.01	2001
1800	1243	1.43	1461	1303	1.61	1540	1359	1.78	1702	1418	1.95	1865	**1471**	**2.18**	**2167**
1900	1271	1.56	1594	1330	1.74	1664	1386	1.93	1846	1439	2.11	2018	**1493**	**2.36**	**2345**
2000	1298	1.69	1727	1358	1.89	1808	1413	2.08	1989	**1468**	**2.27**	**2171**	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1075 to 1455 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
3. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
4. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
5. Interpolation is permissible. Do not extrapolate.

48TF006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208V			230, 460, 575 V			208 V			230, 460, 575 V			208 V			230, 460, 575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1500	0.74	0.67	750	1.06	0.71	791	1.07	0.70	782	1.27	0.76	845	1.26	0.79	875	1.33	0.85	949
1600	0.54	0.70	780	0.90	0.74	824	0.92	0.74	821	1.13	0.79	883	1.14	0.82	913	1.22	0.89	988
1700	0.34	0.73	810	0.75	0.77	857	0.77	0.77	861	1.00	0.83	921	1.01	0.85	950	1.11	0.92	1027
1800	0.14	0.75	839	0.59	0.80	891	0.62	0.81	900	0.87	0.86	959	0.89	0.88	988	1.00	0.96	1066
1900	—	—	—	0.44	0.83	924	0.47	0.84	940	0.74	0.90	997	0.77	0.92	1025	0.89	0.99	1105
2000	—	—	—	0.28	0.86	957	0.32	0.88	979	0.61	0.93	1035	0.64	0.95	1063	0.78	1.03	1144
2100	—	—	—	0.13	0.89	990	0.17	0.91	1018	0.48	0.96	1073	0.51	0.99	1101	0.67	1.06	1183
2200	—	—	—	—	—	—	0.02	0.95	1058	0.35	1.00	1111	0.39	1.02	1138	0.56	1.10	1222
2300	—	—	—	—	—	—	—	—	—	0.22	1.03	1149	0.26	1.06	1176	0.45	1.13	1261
2400	—	—	—	—	—	—	—	—	—	0.09	1.07	1187	0.14	1.09	1213	0.34	1.17	1300
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23	1.20	1340

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
FIOP — Factory-Installed Option

NOTES:
1. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for Additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**730**	**0.34**	**357**	**789**	**0.40**	**420**	**896**	**0.53**	**557**	990	0.67	704	1072	0.83	872	1153	1.00	1051
1600	**770**	**0.40**	**420**	**826**	**0.46**	**483**	931	0.61	641	1020	0.75	788	1101	0.91	956	1178	1.09	1145
1700	**811**	**0.47**	**494**	**865**	**0.54**	**567**	966	0.69	725	1051	0.84	883	1133	1.01	1061	1205	1.18	1240
1800	**852**	**0.55**	**578**	905	0.62	651	1002	0.78	820	1084	0.93	977	1163	1.10	1156	1235	1.29	1355
1900	**894**	**0.54**	**567**	945	0.72	757	1037	0.88	925	1119	1.04	1093	1194	1.21	1271	1266	1.40	1471
2000	936	0.74	778	984	0.82	862	1072	0.98	1030	1154	1.16	1219	1226	1.33	1397	1297	1.53	1608
2100	978	0.85	893	1024	0.93	977	1108	1.10	1156	1192	1.29	1355	1259	1.47	1545	**1327**	**1.66**	**1744**
2200	1021	0.97	1019	1064	1.05	1103	1145	1.22	1282	1225	1.43	1503	1294	1.62	1702	**1359**	**1.80**	**1902**
2300	1064	1.10	1156	1104	1.18	1240	1183	1.36	1429	1260	1.57	1650	**1330**	**1.78**	**1870**	**1392**	**1.97**	**2070**
2400	1107	1.24	1303	1145	1.32	1387	1222	1.45	1524	1296	1.73	1818	**1365**	**1.94**	**2038**	1426	2.15	2259
2500	1150	1.39	1460	1186	1.48	1555	1262	1.68	1765	**1331**	**1.89**	**1986**	1400	2.12	2227	1461	2.34	2459

48TF006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1221	1.17	1229	1256	1.30	1366	1283	1.32	1387	**1303**	**1.22**	**1282**
1600	1252	1.27	1334	**1311**	**1.45**	**1524**	**1340**	**1.58**	**1660**	**1330**	**1.61**	**1692**
1700	1278	1.37	1439	**1345**	**1.57**	**1650**	**1397**	**1.76**	**1849**	**1424**	**1.89**	**1986**
1800	**1303**	**1.48**	**1555**	**1371**	**1.69**	**1776**	**1433**	**1.90**	**1996**	1480	2.09	2196
1900	**1330**	**1.59**	**1671**	**1396**	**1.80**	**1902**	1460	2.03	2133	1517	2.25	2364
2000	**1362**	**1.73**	**1818**	**1422**	**1.94**	**2038**	1485	2.16	2270	1544	2.40	2522
2100	**1393**	**1.87**	**1965**	1452	2.08	2185	1510	2.31	2427	1570	2.55	2674
2200	1423	2.02	2122	1483	2.24	2354	1538	2.46	2585	1594	2.71	2821
2300	1454	2.18	2291	1515	2.41	2532	1571	2.64	2758	1623	2.88	2976
2400	1485	2.36	2480	1544	2.59	2721	1604	2.84	2947	1657	3.07	3152
2500	1518	2.55	2679	1574	2.78	2905	1633	3.03	3134	1692	3.28	3345

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 900 to 1300 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 1.30 for single-phase units and 2.40 for 3-phase units and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**789**	**0.40**	**420**	**896**	**0.53**	**557**	**990**	**0.67**	**704**	**1072**	**0.83**	**872**	**1153**	**1.00**	**1051**	**1221**	**1.17**	**1229**
1600	**826**	**0.46**	**483**	**931**	**0.61**	**641**	**1020**	**0.75**	**788**	**1101**	**0.91**	**956**	**1178**	**1.09**	**1145**	**1252**	**1.27**	**1334**
1700	**865**	**0.54**	**567**	**966**	**0.69**	**725**	**1051**	**0.84**	**883**	**1133**	**1.01**	**1061**	**1205**	**1.18**	**1240**	**1278**	**1.37**	**1439**
1800	**905**	**0.62**	**661**	**1002**	**0.78**	**820**	**1084**	**0.93**	**977**	**1163**	**1.10**	**1156**	**1235**	**1.29**	**1355**	1303	1.48	1555
1900	**945**	**0.72**	**757**	**1037**	**0.88**	**925**	**1119**	**1.04**	**1093**	**1194**	**1.21**	**1271**	**1266**	**1.40**	**1471**	1330	1.59	1671
2000	**984**	**0.82**	**862**	**1072**	**0.98**	**1030**	**1154**	**1.16**	**1219**	**1226**	**1.33**	**1397**	**1297**	**1.53**	**1608**	1362	1.73	1818
2100	**1024**	**0.93**	**977**	**1108**	**1.10**	**1156**	**1192**	**1.29**	**1355**	**1259**	**1.47**	**1545**	1327	1.66	1744	1393	1.87	1965
2200	**1064**	**1.05**	**1103**	**1145**	**1.22**	**1282**	**1225**	**1.43**	**1503**	**1294**	**1.62**	**1702**	1359	1.80	1902	1423	2.02	2122
2300	**1104**	**1.18**	**1240**	**1183**	**1.36**	**1429**	**1260**	**1.57**	**1650**	1330	1.78	1870	1392	1.97	2070	1454	2.18	2291
2400	**1145**	**1.32**	**1387**	**1222**	**1.45**	**1524**	**1296**	**1.73**	**1818**	1365	1.94	2038	1426	2.15	2259	1485	2.36	2480
2500	**1186**	**1.48**	**1555**	**1262**	**1.68**	**1765**	1331	1.89	1986	1400	2.12	2227	1461	2.34	2459	1518	2.55	2679

48TF006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**1256**	**1.30**	**1366**	**1283**	**1.32**	**1387**	1303	1.22	1282	1345	1.34	1390
1600	1311	1.45	1524	1340	1.58	1660	1330	1.61	1692	1373	1.77	1834
1700	1345	1.57	1650	1397	1.76	1849	1424	1.89	1986	1470	2.08	2153
1800	1371	1.69	1776	1433	1.90	1996	1480	2.09	2196	1528	2.30	2381
1900	1396	1.80	1902	1460	2.03	2133	1517	2.25	2364	1566	2.47	2563
2000	1422	1.94	2038	1485	2.16	2270	1544	2.40	2522	1594	2.64	2734
2100	1452	2.08	2185	1510	2.31	2427	1570	2.55	2674	1620	2.80	2905
2200	1483	2.24	2354	1538	2.46	2585	1594	2.71	2821	1645	2.98	3087
2300	1515	2.41	2532	1571	2.64	2758	1623	2.88	2976	1675	3.17	3280
2400	1544	2.59	2721	1604	2.84	2947	1657	3.07	3152	1710	3.38	3497
2500	1574	2.78	2905	1633	3.03	3134	1692	3.28	3345	1746	3.61	3736

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1300 to 1685 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**885**	**0.63**	**623**	**942**	**0.73**	**700**	**1047**	**0.90**	**835**	1139	1.05	956	1193	1.14	1031	1276	1.30	1165
1900	**928**	**0.73**	**700**	**982**	**0.83**	**779**	1084	1.02	932	1160	1.11	1006	1223	1.24	1114	1301	1.38	1233
2000	**971**	**0.84**	**787**	**1022**	**0.94**	**867**	1121	1.12	1014	1188	1.22	1097	1254	1.36	1216	1329	1.44	1284
2100	**1015**	**0.97**	**891**	**1063**	**1.10**	**998**	1140	1.18	1064	1196	1.27	1140	1272	1.45	1292	1354	1.58	1404
2200	**1060**	**1.10**	**998**	1104	1.20	1081	1159	1.23	1106	1229	1.41	1258	1306	1.53	1361	1363	1.70	1508
2300	1104	1.25	1123	1130	1.27	1140	1196	1.37	1224	1264	1.56	1387	1340	1.66	1473	1397	1.86	1648
2400	1138	1.30	1165	1174	1.37	1224	1245	1.57	1396	1305	1.63	1447	1373	1.84	1630	1440	1.95	1726
2500	1183	1.43	1275	1201	1.50	1335	1284	1.65	1465	1338	1.75	1552	1402	1.99	1761	**1469**	**2.04**	**1805**
2600	1210	1.58	1404	1246	1.67	1482	1312	1.76	1560	1366	1.96	1735	1435	2.10	1858	**1494**	**2.19**	**1936**
2700	1254	1.76	1560	1285	1.80	1595	1354	1.95	1726	1403	2.14	1892	**1474**	**2.21**	**1954**	1536	2.46	2171
2800	1274	1.82	1613	1304	1.85	1639	1374	2.12	1875	1459	2.25	1989	1514	2.42	2136	1570	2.66	2343
2900	1318	1.95	1726	1345	2.05	1814	1412	2.32	2050	1496	2.54	2240	1529	2.61	2300	1603	2.87	2521
3000	1362	2.20	1945	1378	2.30	2032	1451	2.40	2119	1534	2.66	2343	1560	2.81	2470	1611	3.01	2648

48TF007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1341	1.40	1250	1413	1.55	1378	**1474**	**1.58**	**1404**
1900	1374	1.53	1361	1437	1.62	1439	**1490**	**1.67**	**1482**
2000	1396	1.66	1473	1460	1.68	1491	**1509**	**1.77**	**1569**
2100	1413	1.75	1552	**1475**	**1.73**	**1534**	**1529**	**1.92**	**1700**
2200	1434	1.81	1604	**1487**	**1.85**	**1639**	**1554**	**2.07**	**1831**
2300	1459	1.88	1665	**1520**	**2.07**	**1831**	**1576**	**2.24**	**1980**
2400	**1502**	**2.06**	**1823**	**1552**	**2.24**	**1980**	1604	2.42	2136
2500	**1524**	**2.24**	**1980**	1585	2.42	2136	1638	2.60	2292
2600	**1552**	**2.40**	**2119**	1616	2.63	2317	1671	2.80	2462
2700	1584	2.61	2300	1646	2.83	2487	1706	2.97	2653
2800	1624	2.85	2504	1677	2.99	2661	—	—	—
2900	1671	3.03	2725	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1070 to 1460 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**942**	**0.73**	**700**	**1047**	**0.90**	**835**	**1139**	**1.05**	**956**	**1193**	**1.14**	**1031**	**1276**	**1.30**	**1165**	1341	1.40	1250
1900	**982**	**0.83**	**779**	**1084**	**1.02**	**932**	**1160**	**1.11**	**1006**	**1223**	**1.24**	**1114**	1301	1.38	1233	1374	1.53	1361
2000	**1022**	**0.94**	**867**	**1121**	**1.12**	**1014**	**1188**	**1.22**	**1097**	**1254**	**1.36**	**1216**	1329	1.44	1284	1396	1.66	1473
2100	**1063**	**1.10**	**998**	**1140**	**1.18**	**1064**	**1196**	**1.27**	**1140**	**1272**	**1.45**	**1292**	1354	1.58	1404	1413	1.75	1552
2200	**1104**	**1.20**	**1081**	**1159**	**1.23**	**1106**	**1229**	**1.41**	**1258**	1306	1.53	1361	1363	1.70	1508	1434	1.81	1604
2300	**1130**	**1.27**	**1140**	**1196**	**1.37**	**1224**	**1264**	**1.56**	**1387**	1340	1.66	1473	1397	1.86	1648	1459	1.88	1665
2400	**1174**	**1.37**	**1224**	**1245**	**1.57**	**1396**	1305	1.63	1447	1373	1.84	1630	1440	1.95	1726	1502	2.06	1823
2500	**1201**	**1.50**	**1335**	**1284**	**1.65**	**1465**	1338	1.75	1552	1402	1.99	1761	1469	2.04	1805	1524	2.24	1980
2600	**1246**	**1.67**	**1482**	1312	1.76	1560	1366	1.96	1735	1435	2.10	1858	1494	2.19	1936	1552	2.40	2119
2700	**1285**	**1.80**	**1595**	1354	1.95	1726	1403	2.14	1892	1474	2.21	1954	1536	2.46	2171	1584	2.61	2300
2800	1304	1.85	1639	1374	2.12	1875	1459	2.25	1989	1514	2.42	2136	1570	2.66	2343	1624	2.85	2504
2900	1345	2.05	1814	1412	2.32	2050	1496	2.54	2240	1529	2.61	2300	1603	2.87	2521	1671	3.03	2725
3000	1378	2.30	2032	1451	2.40	2119	1534	2.66	2343	1560	2.81	2470	1611	3.01	2648	1692	3.49	3140

48TF007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1413	1.55	1378	1474	1.58	1404	1522	1.74	1564	1566	1.89	1704
1900	1437	1.62	1439	1490	1.67	1482	1538	1.84	1653	1583	2.00	1801
2000	1460	1.68	1491	1509	1.77	1569	1558	1.95	1752	1603	2.12	1909
2100	1475	1.73	1534	1529	1.92	1700	1578	2.11	1901	1624	2.30	2070
2200	1478	1.85	1639	1554	2.07	1831	1604	2.28	2049	1651	2.48	2232
2300	1520	2.07	1831	1576	2.24	1980	1627	2.46	2218	1674	2.68	2415
2400	1552	2.24	1980	1604	2.42	2136	1656	2.66	2396	1704	2.90	2609
2500	1585	2.42	2136	1638	2.60	2292	1691	2.86	2574	1740	3.12	2804
2600	1616	2.63	2317	1671	2.80	2462	1725	3.08	2772	1775	3.35	3019
2700	1646	2.83	2487	1706	2.97	2653	1761	3.27	2941	—	—	—
2800	1677	2.99	2661	1739	3.33	2998	1795	3.67	3299	—	—	—
2900	1742	3.43	3090	—	—	—	—	—	—	—	—	—
3000	1764	3.95	3558	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 1300 to 1685 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF008 (7 1/2 TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			0.9			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**507**	**0.53**	**547**	**586**	**0.73**	**700**	658	0.97	891	722	1.22	1097	752	1.34	1199	783	1.46	1301
2300	**513**	**0.55**	**562**	592	0.76	723	663	1.00	916	727	1.26	1131	756	1.38	1224	786	1.49	1327
2400	**528**	**0.60**	**600**	606	0.83	779	674	1.06	965	738	1.34	1199	766	1.46	1301	795	1.58	1404
2500	**542**	**0.66**	**646**	619	0.90	835	686	1.13	1022	748	1.41	1258	777	1.55	1370	806	1.68	1491
2550	**550**	**0.69**	**669**	627	0.94	867	692	1.17	1056	754	1.45	1292	783	1.60	1413	812	1.74	1543
2600	**557**	**0.72**	**692**	634	0.97	891	698	1.21	1089	759	1.49	1327	787	1.64	1456	816	1.79	1587
2700	**573**	**0.79**	**747**	648	1.05	956	711	1.29	1156	770	1.58	1404	798	1.73	1534	827	1.88	1665
2800	**588**	**0.86**	**803**	662	1.13	1022	723	1.38	1233	782	1.66	1473	809	1.82	1613	837	1.98	1753
2900	604	0.94	867	676	1.21	1089	737	1.48	1318	794	1.76	1560	821	1.92	1700	848	2.08	1840
3000	620	1.02	932	690	1.30	1165	750	1.58	1404	806	1.86	1648	832	2.02	1788	849	2.18	1927
3100	636	1.11	1006	704	1.39	1241	764	1.69	1499	818	1.97	1744	844	2.13	1884	870	2.29	2023
3200	652	1.21	1089	718	1.49	1327	778	1.80	1595	831	2.09	1849	856	2.25	1980	882	2.40	2119
3300	668	1.31	1173	732	1.59	1413	793	1.92	1700	844	2.21	1954	869	2.37	2093	894	2.53	2232
3400	684	1.41	1258	747	1.70	1508	807	2.04	1805	857	2.35	2076	882	2.51	2206	907	2.66	2343
3500	701	1.53	1361	762	1.82	1613	821	2.16	1910	871	2.48	2188	895	2.64	2326	919	2.80	2462
3600	717	1.65	1465	777	1.94	1718	835	2.29	2023	885	2.63	2317	908	2.79	2453	932	2.95	2587
3700	733	1.77	1569	792	2.07	1831	849	2.42	2136	899	2.78	2445	922	2.95	2579	945	3.11	2718
3750	742	1.84	1630	800	2.14	1892	856	2.49	2197	907	2.86	2512	929	3.03	2653	952	3.20	2719

48TF008 (7 1/2 TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	843	1.81	1604	908	2.25	1989	955	2.59	2283
2300	846	1.84	1630	910	2.25	2015	959	2.61	2300
2400	853	1.88	1665	912	2.31	2041	967	2.68	2360
2500	859	1.94	1718	919	2.37	2093	971	2.73	2403
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428
2600	868	2.04	1805	921	2.41	2136	976	2.78	2445
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445
3700	990	3.45	2987	1034	3.84	3272	1076	4.26	3544
3750	997	3.54	3055	1040	3.93	3333	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard drive range is 590 to 840 rpm. Alternate drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▒ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.4 and maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**507**	**0.53**	**547**	**586**	**0.73**	**700**	**658**	**0.97**	**891**	**722**	**1.22**	**1097**	**783**	**1.46**	**1301**	**843**	**1.81**	**1604**
2300	**513**	**0.55**	**562**	**592**	**0.76**	**723**	**663**	**1.00**	**916**	**727**	**1.26**	**1131**	**786**	**1.49**	**1327**	**846**	**1.84**	**1630**
2400	**528**	**0.60**	**600**	**606**	**0.83**	**779**	**674**	**1.06**	**965**	**738**	**1.34**	**1199**	**795**	**1.58**	**1404**	**853**	**1.88**	**1665**
2500	**542**	**0.66**	**646**	**619**	**0.90**	**835**	**686**	**1.13**	**1022**	**748**	**1.41**	**1258**	**806**	**1.68**	**1491**	**859**	**1.94**	**1718**
2550	**550**	**0.69**	**669**	**627**	**0.94**	**867**	**692**	**1.17**	**1056**	**754**	**1.45**	**1292**	**812**	**1.74**	**1543**	864	1.99	1761
2600	**557**	**0.72**	**692**	**634**	**0.97**	**891**	**698**	**1.21**	**1089**	**759**	**1.49**	**1327**	**816**	**1.79**	**1587**	868	2.04	1805
2700	**573**	**0.79**	**747**	**649**	**1.05**	**956**	**711**	**1.29**	**1156**	**770**	**1.58**	**1404**	**827**	**1.88**	**1665**	878	2.16	1910
2800	**588**	**0.86**	**803**	**662**	**1.13**	**1022**	**723**	**1.38**	**1233**	**782**	**1.66**	**1473**	**837**	**1.98**	**1753**	889	2.29	2023
2900	**604**	**0.94**	**867**	**676**	**1.21**	**1089**	**737**	**1.48**	**1318**	**794**	**1.76**	**1560**	**848**	**2.08**	**1840**	900	2.41	2128
3000	**620**	**1.02**	**932**	**690**	**1.30**	**1165**	**750**	**1.58**	**1404**	**806**	**1.86**	**1648**	**849**	**2.18**	**1927**	910	2.52	2223
3100	**636**	**1.11**	**1006**	**704**	**1.39**	**1241**	**764**	**1.69**	**1499**	**818**	**1.97**	**1744**	870	2.29	2023	920	2.64	2326
3200	**652**	**1.21**	**1089**	**718**	**1.49**	**1327**	**778**	**1.80**	**1595**	**831**	**2.09**	**1849**	882	2.40	2119	931	2.76	2428
3300	**668**	**1.31**	**1173**	**732**	**1.59**	**1413**	**793**	**1.92**	**1700**	**844**	**2.21**	**1954**	894	2.53	2232	942	2.89	2537
3400	**684**	**1.41**	**1258**	**747**	**1.70**	**1508**	**807**	**2.04**	**1805**	**857**	**2.35**	**2076**	907	2.66	2343	954	3.02	2645
3500	**701**	**1.53**	**1361**	**762**	**1.82**	**1613**	**821**	**2.16**	**1010**	871	2.48	2188	919	2.80	2462	966	3.15	2751
3600	**717**	**1.65**	**1465**	**777**	**1.94**	**1718**	**835**	**2.29**	**2023**	885	2.63	2317	932	2.95	2587	978	3.30	2870
3700	**733**	**1.77**	**1569**	**792**	**2.07**	**1831**	**849**	**2.42**	**2136**	899	2.78	2445	945	3.11	2718	990	3.45	2987
3750	**742**	**1.84**	**1630**	**800**	**2.14**	**1892**	**856**	**2.49**	**2197**	907	2.86	2512	952	3.20	2719	997	3.54	3055

48TF008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	908	2.25	1989	955	2.59	2283	991	2.89	2543	1023	3.19	2805
2300	910	2.25	2015	959	2.61	2300	995	2.91	2563	1028	3.21	2827
2400	912	2.31	2041	967	2.68	2360	1003	2.99	2631	1036	3.30	2902
2500	919	2.37	2093	971	2.73	2403	1007	3.05	2681	1041	3.36	2956
2550	920	2.39	2110	974	2.76	2428	1010	3.08	2710	1044	3.40	2989
2600	921	2.41	2136	976	2.78	2445	1012	3.10	2730	1046	3.42	3011
2700	928	2.45	2162	983	2.88	2529	1020	3.21	2828	1053	3.54	3119
2800	937	2.57	2266	986	2.91	2554	1023	3.25	2857	1057	3.58	3151
2900	947	2.70	2377	993	3.01	2637	1030	3.36	2955	1064	3.70	3260
3000	958	2.85	2504	1002	3.15	2751	1039	3.51	3093	1074	3.88	3411
3100	968	2.99	2620	1012	3.30	2870	1050	3.68	3240	1084	4.06	3574
3200	979	3.13	2735	1023	3.47	3002	1061	3.87	3407	—	—	—
3300	989	3.26	2839	1034	3.63	3121	1072	4.05	3564	—	—	—
3400	1000	3.40	2948	1044	3.79	3237	—	—	—	—	—	—
3500	1011	3.55	3062	1054	3.94	3340	—	—	—	—	—	—
3600	1022	3.69	3165	1065	4.10	3445	—	—	—	—	—	—
3700	1034	3.84	3272	—	—	—	—	—	—	—	—	—
3750	1040	3.93	3333	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 860 to 1080 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			0.9			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**550**	**0.69**	**669**	**627**	**0.94**	**867**	692	1.17	1056	754	1.45	1292	783	1.60	1413	812	1.74	1543
2600	**557**	**0.72**	**692**	**634**	**0.97**	**891**	698	1.21	1089	759	1.49	1327	787	1.64	1456	816	1.79	1587
2700	**573**	**0.79**	**747**	**648**	**1.05**	**956**	711	1.29	1156	770	1.58	1404	798	1.73	1534	827	1.88	1665
2800	**588**	**0.86**	**803**	**662**	**1.13**	**1022**	723	1.38	1233	782	1.66	1473	809	1.82	1613	837	1.98	1753
2900	**604**	**0.94**	**867**	**676**	**1.21**	**1089**	737	1.48	1318	794	1.76	1560	821	1.92	1700	848	2.08	1840
3000	**620**	**1.02**	**932**	690	1.30	1165	750	1.58	1404	806	1.86	1648	832	2.02	1788	849	2.18	1927
3100	**636**	**1.11**	**1006**	704	1.39	1241	764	1.69	1499	818	1.97	1744	844	2.13	1884	870	2.29	2023
3200	**652**	**1.21**	**1089**	718	1.49	1327	778	1.80	1595	831	2.09	1849	856	2.25	1980	882	2.40	2119
3300	**668**	**1.31**	**1173**	732	1.59	1413	793	1.92	1700	844	2.21	1954	869	2.37	2093	894	2.53	2232
3400	**684**	**1.41**	**1258**	747	1.70	1508	807	2.04	1805	857	2.35	2076	882	2.51	2206	907	2.66	2343
3500	701	1.53	1361	762	1.82	1613	821	2.16	1910	871	2.48	2188	895	2.64	2326	919	2.80	2462
3600	717	1.65	1465	777	1.94	1718	835	2.29	2023	885	2.63	2317	908	2.79	2453	932	2.95	2587
3700	733	1.77	1569	792	2.07	1831	849	2.42	2136	899	2.78	2445	922	2.95	2579	945	3.11	2718
3750	742	1.84	1630	800	2.14	1892	856	2.49	2197	907	2.86	2512	929	3.03	2653	952	3.20	2719
3800	750	1.90	1683	807	2.21	1954	863	2.56	2257	914	2.93	2571	936	3.11	2847	958	3.28	2854
3900	767	2.04	1805	822	2.35	2076	877	2.71	2386	928	3.09	2702	950	3.27	2979	972	3.45	2987
4000	783	2.18	1927	838	2.50	2206	891	2.86	2512	942	3.26	2839	964	3.45	3187	986	3.63	3121
4100	800	2.34	2067	854	2.66	2343	905	3.02	2645	956	2.43	2971	978	3.62	3244	1000	3.81	3251
4200	817	2.49	2197	869	2.82	2479	920	3.19	2783	970	3.60	3099	992	3.80	3258	1015	4.00	3380
4250	826	2.58	2275	877	2.91	2554	928	3.28	2854	977	3.69	3165	999	3.90	3306	1022	4.10	3445

48TF009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in.wg)								
	1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428
2600	868	2.04	1805	921	2.41	2136	976	2.78	2445
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445
3700	990	3.45	2987	1034	3.84	3272	1076	4.26	3544
3750	997	3.54	3055	1040	3.93	3333	1082	5.27	3609
3800	1003	3.62	3114	1045	4.01	3387	1087	4.43	3643
3900	1015	3.80	3244	1057	4.18	3495	1098	4.60	3733
4000	1028	3.99	3373	1070	4.36	3603	1110	4.78	3820
4100	1042	4.18	3495	1082	4.56	3713	1122	4.97	3902
4200	1055	4.38	3614	1095	4.76	3811	1134	5.16	3971
4250	1062	4.49	3676	1102	4.87	3860	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 685 to 935 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF009 (8 1/2 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**550**	**0.69**	**669**	**627**	**0.94**	**867**	**692**	**1.17**	**1056**	**754**	**1.45**	**1292**	**812**	**1.74**	**1543**
2600	**557**	**0.72**	**692**	**634**	**0.97**	**891**	**698**	**1.21**	**1089**	**759**	**1.49**	**1327**	**816**	**1.79**	**1587**
2700	**573**	**0.79**	**747**	**648**	**1.05**	**956**	**711**	**1.29**	**1156**	**770**	**1.59**	**1404**	**827**	**1.88**	**1665**
2800	**688**	**0.86**	**803**	**662**	**1.13**	**1022**	**723**	**1.38**	**1233**	**782**	**1.68**	**1473**	**837**	**1.98**	**1753**
2900	**604**	**0.94**	**867**	**676**	**1.21**	**1089**	**737**	**1.48**	**1318**	**794**	**1.76**	**1560**	**848**	**2.08**	**1840**
3000	**620**	**1.02**	**932**	**690**	**1.30**	**1165**	**750**	**1.58**	**1404**	**806**	**1.86**	**1648**	**849**	**2.18**	**1927**
3100	**636**	**1.11**	**1006**	**704**	**1.39**	**1241**	**764**	**1.69**	**1499**	**818**	**1.97**	**1744**	870	2.29	2023
3200	**652**	**1.21**	**1089**	**718**	**1.49**	**1327**	**778**	**1.80**	**1595**	**831**	**2.09**	**1849**	882	2.40	2119
3300	**668**	**1.31**	**1173**	**732**	**1.59**	**1413**	**793**	**1.92**	**1700**	**844**	**2.21**	**1954**	894	2.53	2232
3400	**684**	**1.41**	**1258**	**747**	**1.70**	**1508**	**807**	**2.04**	**1805**	**857**	**2.35**	**2076**	907	2.66	2343
3500	**701**	**1.53**	**1361**	**762**	**1.82**	**1613**	**821**	**2.16**	**1910**	871	2.48	2188	919	2.80	2462
3600	**717**	**1.65**	**1465**	**777**	**1.94**	**1718**	**835**	**2.29**	**2023**	885	2.36	2317	932	2.95	2587
3700	**733**	**1.77**	**1569**	**792**	**2.07**	**1831**	**849**	**2.42**	**2136**	899	2.78	2445	945	3.11	2718
3750	**742**	**1.84**	**1630**	**800**	**2.14**	**1892**	**856**	**2.49**	**2197**	907	2.86	2512	952	3.20	2719
3800	**750**	**1.90**	**1683**	**807**	**2.21**	**1954**	863	2.56	2257	914	2.93	2571	958	3.28	2854
3900	**767**	**2.04**	**1805**	**822**	**2.35**	**2076**	877	2.71	2386	928	3.09	2702	972	3.45	2987
4000	**783**	**2.18**	**1927**	**838**	**2.50**	**2206**	891	2.86	2512	942	3.26	2839	986	3.63	3121
4100	**800**	**2.34**	**2067**	**854**	**2.66**	**2343**	905	3.02	2645	956	3.43	2971	1000	3.81	3251
4200	**817**	**2.49**	**2197**	869	2.82	2479	920	3.19	2783	970	3.60	3099	1015	4.00	3380
4250	**826**	**2.58**	**2275**	877	2.91	2554	928	3.28	2854	977	3.69	3165	1022	4.10	3445

48TF009 (8 1/2 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428	1005	3.04	2672	1034	3.31	2910
2600	868	2.04	1805	921	2.41	2136	976	2.78	2445	1008	3.06	2691	1037	3.33	2931
2700	878	2.16	1910	928	2.45	2162	893	2.88	2529	1015	3.17	2788	1044	3.45	3036
2800	889	2.92	2023	937	2.57	2266	986	2.91	2554	1018	3.20	2817	1047	3.49	3068
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637	1025	3.31	2914	1055	3.61	3174
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751	1034	3.47	3049	1064	3.77	3321
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870	1045	3.63	3195	1075	3.95	3479
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002	1056	3.82	3359	1087	4.16	3659
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121	1067	3.99	3514	—	—	—
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237	1078	4.17	3669	—	—	—
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340	—	—	—	—	—	—
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445	—	—	—	—	—	—
3700	990	3.45	2987	1034	3.84	3272	—	—	—	—	—	—	—	—	—
3750	997	3.54	3055	1040	3.93	3333	—	—	—	—	—	—	—	—	—
3800	1003	3.62	3114	1045	4.01	3387	—	—	—	—	—	—	—	—	—
3900	1015	3.80	3244	1057	4.18	3495	—	—	—	—	—	—	—	—	—
4000	1028	3.99	3373	—	—	—	—	—	—	—	—	—	—	—	—
4100	1042	4.28	3495	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Motor drive range is 860 to 1080 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF012 (10 TONS) — STANDARD MOTOR AND ALTERNATE MOTOR*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**552**	**0.68**	**661**	**632**	**0.87**	**810**	701	1.05	956	761	1.22	1097	816	1.36	1216	871	1.54	1370
3100	**565**	**0.74**	**708**	**644**	**0.93**	**859**	711	1.12	1014	772	1.31	1173	825	1.45	1292	879	1.63	1447
3200	**578**	**0.81**	**763**	**656**	**1.00**	**916**	723	1.20	1081	782	1.39	1241	835	1.55	1378	887	1.71	1517
3300	**591**	**0.88**	**818**	**668**	**1.08**	**973**	734	1.28	1148	793	1.47	1310	845	1.65	1465	895	1.80	1595
3400	**605**	**0.96**	**883**	**680**	**1.16**	**1047**	745	1.36	1216	803	1.56	1387	856	1.75	1552	904	1.91	1691
3500	**619**	**1.04**	**948**	**691**	**1.23**	**1106**	755	1.44	1284	813	1.65	1465	867	1.86	1648	914	2.03	1796
3600	**633**	**1.13**	**1022**	703	1.31	1173	766	1.52	1353	824	1.74	1543	877	1.97	1744	924	2.15	1901
3700	**648**	**1.23**	**1106**	714	1.39	1241	777	1.61	1430	835	1.85	1639	887	2.07	1831	935	2.28	2015
3800	**662**	**1.33**	**1190**	726	1.51	1310	789	1.72	1526	846	1.95	1726	897	2.18	1927	**946**	**2.40**	**2169**
3900	**677**	**1.44**	**1284**	738	1.61	1387	801	1.82	1613	857	2.06	1823	908	2.29	2023	**956**	**2.53**	**2282**
4000	**692**	**1.55**	**1378**	750	1.73	1473	813	1.94	1718	868	2.17	1919	918	2.40	2119	**967**	**2.66**	**2397**
4100	707	1.67	1482	762	1.84	1560	825	2.05	1814	878	2.28	2015	929	2.53	2282	**977**	**2.78**	**2505**
4200	722	1.80	1595	775	1.97	1656	837	2.16	1910	889	2.40	2119	**941**	**2.66**	**2397**	987	2.91	2624
4300	737	1.94	1718	787	2.09	1761	848	2.27	2006	900	2.52	2273	**952**	**2.80**	**2523**	999	3.04	2744
4400	752	2.08	1840	800	2.21	1875	860	2.39	2110	912	2.66	2397	962	2.93	2642	1008	3.19	2885
4500	768	2.24	1980	814	2.35	1989	871	2.51	2265	924	2.80	2523	973	3.07	2772	1019	3.34	3029
4600	783	2.40	2119	827	2.50	2121	883	2.64	2380	937	2.95	2661	983	3.21	2904	1027	3.49	3176
4700	799	2.56	2309	841	2.64	2291	894	2.77	2496	949	3.10	2800	994	3.36	3049	1037	3.64	3323
4800	814	2.74	2469	855	2.80	2424	906	2.91	2624	961	3.26	2952	1004	3.50	3193	1047	3.80	3474
4900	826	2.89	2505	868	2.90	2578	918	3.05	2754	972	3.40	3088	1014	3.65	3341	1057	3.96	3629
5000	840	3.05	2702	883	3.10	2735	931	3.21	2904	980	3.56	3248	1025	3.80	3494	1067	4.13	3788

48TF012 (10 TONS) — STANDARD MOTOR AND ALTERNATE MOTOR* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)					
	1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	918	1.67	1482	**967**	**1.89**	**1736**
3100	928	1.78	1478	**973**	**1.94**	**1778**
3200	**937**	**1.90**	**1745**	**981**	**2.04**	**1861**
3300	**946**	**2.00**	**1828**	**991**	**2.16**	**1963**
3400	**953**	**2.10**	**1912**	**1000**	**2.29**	**2074**
3500	**961**	**2.20**	**1997**	**1009**	**2.41**	**2177**
3600	**970**	**2.32**	**2099**	**1017**	**2.53**	**2282**
3700	**980**	**2.45**	**2212**	**1024**	**2.64**	**2380**
3800	**989**	**2.58**	**2326**	**1033**	**2.76**	**2487**
3900	**1000**	**2.73**	**2460**	1042	2.91	2617
4000	**1010**	**2.87**	**2587**	1050	3.05	2743
4100	1017	3.01	2688	1059	3.19	2874
4200	1026	3.17	2809	1067	3.34	3010
4300	1035	3.32	2931	1075	3.50	3151
4400	1044	3.49	3056	1084	3.66	3297
4500	1053	3.65	3182	1092	3.82	3448
4600	1062	3.83	3311	1101	3.99	3604
4700	1071	4.00	3442	1109	4.16	3765
4800	1080	4.19	3574	1118	4.34	3931
4900	1089	4.38	3709	1126	4.52	4103
5000	1098	4.57	3846	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard motor drive range is 695 to 935 rpm. Alternate motor drive range is 835 to 1085 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates optional high-static motor and drive are required. See high-static data on next page.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 2.4 for the standard motor, 2.9 for the alternate motor. Maximum continuous watts are 2120 for the standard motor, 2615 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF012 (10 TONS) — HIGH-STATIC MOTOR*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**552**	**0.68**	**661**	**632**	**0.87**	**810**	**701**	**1.05**	**956**	**761**	**1.22**	**1097**	**816**	**1.36**	**1216**	871	1.54	1370
3100	**565**	**0.74**	**708**	**644**	**0.93**	**859**	**711**	**1.12**	**1014**	**772**	**1.31**	**1173**	**825**	**1.45**	**1292**	879	1.63	1447
3200	**578**	**0.81**	**763**	**656**	**1.00**	**916**	**723**	**1.20**	**1081**	**782**	**1.39**	**1241**	835	1.55	1378	887	1.71	1517
3300	**591**	**0.88**	**818**	**668**	**1.08**	**973**	**734**	**1.28**	**1148**	**793**	**1.47**	**1310**	845	1.65	1465	895	1.80	1595
3400	**605**	**0.96**	**883**	**680**	**1.16**	**1047**	**745**	**1.36**	**1216**	**803**	**1.56**	**1387**	856	1.75	1552	904	1.91	1691
3500	**619**	**1.04**	**948**	**691**	**1.23**	**1106**	**755**	**1.44**	**1284**	**813**	**1.65**	**1465**	867	1.86	1648	914	2.03	1796
3600	**633**	**1.13**	**1022**	**703**	**1.31**	**1173**	**766**	**1.52**	**1353**	**824**	**1.74**	**1543**	877	1.97	1744	924	2.15	1901
3700	**648**	**1.23**	**1106**	**714**	**1.39**	**1241**	**777**	**1.61**	**1430**	835	1.85	1639	887	2.07	1831	935	2.28	2015
3800	**662**	**1.33**	**1190**	**726**	**1.51**	**1310**	**789**	**1.72**	**1526**	846	1.95	1726	897	2.18	1927	946	2.40	2169
3900	**677**	**1.44**	**1284**	**738**	**1.61**	**1387**	**801**	**1.82**	**1613**	857	2.06	1823	908	2.29	2023	956	2.53	2282
4000	**692**	**1.55**	**1378**	**750**	**1.73**	**1473**	**813**	**1.94**	**1718**	868	2.17	1919	918	2.40	2119	967	2.66	2397
4100	**707**	**1.67**	**1482**	**762**	**1.84**	**1560**	**825**	**2.05**	**1814**	878	2.28	2015	929	2.53	2282	977	2.78	2505
4200	**722**	**1.80**	**1595**	**775**	**1.97**	**1656**	837	2.16	1910	889	2.40	2119	941	2.66	2397	987	2.91	2624
4300	**737**	**1.94**	**1718**	**787**	**2.09**	**1761**	848	2.27	2006	900	2.52	2273	952	2.80	2523	999	3.04	2744
4400	**752**	**2.08**	**1840**	**800**	**2.21**	**1875**	860	2.39	2110	912	2.66	2397	962	2.93	2642	1008	3.19	2885
4500	**768**	**2.24**	**1980**	**814**	**2.35**	**1989**	871	2.51	2265	924	2.80	2523	973	3.07	2772	1019	3.34	3029
4600	**783**	**2.40**	**2119**	**827**	**2.50**	**2121**	883	2.64	2380	937	2.95	2661	983	3.21	2904	1027	3.49	3176
4700	**799**	**2.56**	**2309**	841	2.64	2291	894	2.77	2496	949	3.10	2800	994	3.36	3049	1037	3.64	3323
4800	**814**	**2.74**	**2469**	855	2.80	2424	906	2.91	2624	961	3.26	2952	1004	3.50	3193	1047	3.80	3474
4900	**826**	**2.89**	**2505**	868	2.90	2578	918	3.05	2754	972	3.40	3088	1014	3.65	3341	1057	3.96	3629
5000	840	3.05	2702	883	3.10	2735	931	3.21	2904	980	3.56	3248	1025	3.80	3494	1067	4.13	3788

48TF012 (10 TONS) — HIGH-STATIC MOTOR* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	918	1.67	1482	967	1.89	1736	1010	2.09	1903	1063	2.46	2221
3100	928	1.78	1478	973	1.94	1778	1018	2.17	1971	1070	2.51	2265
3200	937	1.90	1745	981	2.04	1861	1026	2.26	2048	1075	2.57	2318
3300	946	2.00	1828	991	2.16	1963	1032	2.32	2099	1080	2.64	2380
3400	953	2.10	1912	1000	2.29	2074	1041	2.44	2203	1083	2.65	2389
3500	961	2.20	1997	1009	2.41	2177	1051	2.57	2318	1090	2.74	2469
3600	970	2.32	2099	1017	2.53	2282	1061	2.72	2451	1099	2.88	2596
3700	980	2.45	2212	1024	2.64	2380	1069	2.87	2587	1102	2.96	2669
3800	989	2.58	2326	1033	2.76	2487	1070	2.92	2631	1108	3.08	2774
3900	1000	2.73	2460	1042	2.91	2624	1078	3.06	2754	1113	3.20	2890
4000	1010	2.87	2587	1050	3.05	2743	1085	3.19	2879	1119	3.34	3016
4100	1017	3.01	2688	1059	3.19	2874	1092	3.34	3013	1125	3.49	3152
4200	1026	3.17	2809	1067	3.34	3010	1099	3.50	3155	1130	3.65	3299
4300	1035	3.32	2931	1075	3.50	3151	1106	3.66	3304	**1136**	**3.82**	**3457**
4400	1044	3.49	3056	1084	3.66	3297	1113	3.83	3461	**1141**	**4.01**	**3625**
4500	1053	3.65	3182	1092	3.82	3448	1120	4.01	3626	**1147**	**4.20**	**3804**
4600	1062	3.83	3311	1101	3.99	3604	1127	4.20	3799	**1152**	**4.41**	**3994**
4700	1071	4.00	3442	1109	4.16	3765	**1134**	**4.40**	**3979**	**1158**	**4.63**	**4194**
4800	1080	4.19	3574	1118	4.34	3931	**1141**	**4.60**	**4168**	1164	4.86	4404
4900	1089	4.38	3709	1126	4.52	4103	**1148**	**4.81**	**4364**	1169	5.10	4625
5000	1098	4.57	3846	**1135**	**4.71**	**4279**	1155	5.03	4568	1175	5.35	4857

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*High-static motor drive range is 830 to 1130 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 5.25 for the high-static motor. Maximum continuous watts are 4400 for the high-static motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

48TF014 (12½ TONS)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	**684**	**1.24**	**1162**	**755**	**1.48**	**1353**	**816**	**1.70**	**1540**	875	1.94	1738	933	2.23	1988	989	2.49	2219
3800	**691**	**1.28**	**1194**	**761**	**1.52**	**1390**	**822**	**1.75**	**1582**	880	1.98	1776	937	2.28	2035	993	2.55	2272
3900	**705**	**1.37**	**1267**	**773**	**1.62**	**1473**	**834**	**1.86**	**1674**	891	2.08	1862	947	2.39	2131	1002	2.66	2370
4000	**720**	**1.47**	**1349**	**786**	**1.71**	**1548**	**847**	**1.97**	**1768**	902	2.19	1957	957	2.50	2228	1011	2.79	2485
4100	**734**	**1.56**	**1423**	**800**	**1.82**	**1641**	860	2.09	1871	914	2.31	2061	967	2.60	2316	1021	2.91	2593
4200	**749**	**1.66**	**1506**	**813**	**1.92**	**1725**	873	2.21	1974	926	2.44	2175	978	2.71	2414	1030	3.04	2710
4300	**764**	**1.77**	**1598**	**826**	**2.04**	**1828**	886	2.33	2079	938	2.57	2290	989	2.83	2521	1040	3.18	2837
4400	**779**	**1.88**	**1691**	**840**	**2.16**	**1931**	899	2.46	2193	951	2.71	2414	1000	2.96	2638	1050	3.31	2955
4500	**793**	**1.99**	**1785**	**854**	**2.28**	**2035**	912	2.59	2307	963	2.86	2548	1012	3.09	2755	1061	3.43	3065
4600	**808**	**2.11**	**1888**	868	2.42	2158	925	2.73	2459	975	3.00	2674	1024	3.25	2901	1071	3.56	3184
4700	**822**	**2.24**	**2000**	882	2.56	2281	937	2.86	2548	988	3.16	2819	1036	3.42	3056	1082	3.70	3313
4800	**837**	**2.37**	**2114**	896	2.71	2414	950	3.00	2674	1001	3.32	2964	1048	3.59	3212	1093	3.86	3461
4900	**852**	**2.51**	**2237**	910	2.86	2548	963	3.15	2810	1014	3.48	3111	1060	3.76	3368	1105	4.02	3609
5000	867	2.65	2361	924	3.01	2683	977	3.30	2946	1027	3.65	3267	1073	3.94	3535	1117	4.20	3776
5100	882	2.79	2485	938	3.17	2828	990	3.46	3092	1040	3.82	3424	1085	4.12	3702	1129	4.40	3962
5200	896	2.95	2629	952	3.33	2973	1003	3.63	3248	1053	4.00	3590	1098	4.30	3869	1141	4.60	4148
5300	911	3.11	2773	967	3.50	3129	1017	3.80	3405	1066	4.18	3757	1111	4.50	4055	1153	4.80	4335
5400	926	3.27	2919	981	3.68	3294	1030	3.98	3572	1079	4.35	3916	1124	4.70	4270	1166	5.01	4531
5500	940	3.44	3074	995	3.86	3461	1044	4.17	3748	1092	4.54	4093	1137	4.91	4437	1178	5.22	4726
5600	955	3.62	3239	1010	4.04	3627	1058	4.38	3943	1105	4.73	4270	1150	5.12	4633	—	—	—
5700	970	3.80	3405	1024	4.23	3804	1072	4.59	4139	1118	4.93	4456	—	—	—	—	—	—
5800	985	3.99	3581	1039	4.42	3981	1086	4.80	4335	1131	5.14	4652	—	—	—	—	—	—
5900	1000	4.18	3757	1053	4.62	4167	1100	5.02	4540	—	—	—	—	—	—	—	—	—
6000	1015	4.39	3953	1068	4.83	4363	—	—	—	—	—	—	—	—	—	—	—	—
6100	1030	4.59	4139	1083	5.04	4558	—	—	—	—	—	—	—	—	—	—	—	—
6250	1062	5.02	4560	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

48TF014 (12½ TONS)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3750	1041	2.75	2445	1086	2.98	2634	1122	3.16	2819	1146	3.28	2928
3800	1046	2.81	2503	1092	3.05	2719	1129	3.25	2901	1156	3.39	3028
3900	1055	2.94	2620	1102	3.20	2855	1143	3.42	3056	1174	3.59	3212
4000	1064	3.07	2737	1112	3.34	2983	1155	3.59	3212	1190	3.80	3405
4100	1072	3.20	2855	1121	3.49	3120	1165	3.76	3368	1203	3.99	3581
4200	1081	3.34	2983	1130	3.64	3258	1175	3.92	3516	1215	4.18	3757
4300	1090	3.48	3111	1139	3.79	3396	1185	4.08	3664	1226	4.36	3925
4400	1100	3.63	3248	1148	3.94	3535	1194	4.25	3822	1236	4.54	4093
4500	1109	3.78	3387	1157	4.09	3674	1203	4.42	3981	1246	4.72	4260
4600	1119	3.93	3525	1166	4.26	3832	1212	4.58	4130	1255	4.91	4437
4700	1129	4.09	3674	1175	4.43	3990	1221	4.76	4298	1264	5.09	4605
4800	1139	4.24	3813	1185	4.60	4148	1230	4.93	4456	—	—	—
4900	1150	4.38	3943	1194	4.77	4307	1239	5.12	4633	—	—	—
5000	1161	4.54	4093	1204	4.95	4475	—	—	—	—	—	—
5100	1172	4.71	4251	1214	5.13	4642	—	—	—	—	—	—
5200	1183	4.91	4419	—	—	—	—	—	—	—	—	—
5300	1194	5.08	4596	—	—	—	—	—	—	—	—	—
5400	—	—	—	—	—	—	—	—	—	—	—	—
5500	—	—	—	—	—	—	—	—	—	—	—	—
5600	—	—	—	—	—	—	—	—	—	—	—	—
5700	—	—	—	—	—	—	—	—	—	—	—	—
5800	—	—	—	—	—	—	—	—	—	—	—	—
5900	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—
6100	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*Standard motor drive range is 860 to 1080 rpm. Alternate motor drive range is 900 to 1260 rpm. All other rpms require a field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate alternate motor and drive are required.
3. Values include losses for filters, unit casing, and wet coils. See page 52 for accessory/FIOP static pressure information.
4. Maximum continuous bhp is 3.7 for the standard motor, and 5.25 for the alternate motor. The maximum continuous watts are 3313 for the standard motor and 4400 for the alternate motor. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Evaporator-Fan Motor Performance table on page 56 for additional information.
5. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
6. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

AIR QUANTITY LIMITS

UNIT 48TF	MINIMUM CFM	MAXIMUM CFM
004	900	1500
005	1200	2000
006	1500	2500
007	1800	3000
008	2250	3750
009	2550	4250
012	3000	5000
014	3750	6250

SOUND POWER (Total Unit)

UNIT 48TF	SOUND RATING 60 Hz	A-WEIGHTED (dB)	OCTAVE BANDS							
			63	125	250	500	1000	2000	4000	8000
004-007	8.1 Bels	80.5	56.8	75.8	72.4	72.9	74.8	75.4	71.3	69.1
008,009	8.7 Bels	86.4	83.2	87.4	83.5	82.8	83.0	77.7	71.8	67.0
012	8.8 Bels	87.6	97.6	90.4	85.7	84.8	83.9	77.5	71.3	65.8
014	8.7 Bels	86.4	83.7	87.2	83.4	82.8	83.0	77.7	71.8	67.0

ACCESSORY/FIOP STATIC PRESSURE* (in.wg) — 48TF004-007

COMPONENT	CFM									
	900	1200	1400	1600	1800	2000	2200	2400	2600	3000
Durablade Economizer	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
EconoMi$er	0.05	0.09	0.13	0.17	0.22	0.27	0.32	0.39	0.45	0.53

LEGEND

FIOP — Factory-Installed Option

*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

ACCESSORY/FIOP STATIC PRESSURE* (in.wg) — 48TF008-014

COMPONENT	CFM									
	2200	2500	3000	3500	4000	4500	5000	5500	6000	6250
Durablade Economizer	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09
EconoMi$er	0.07	0.09	0.13	0.18	0.23	0.30	0.36	—	—	—

LEGEND

FIOP — Factory-Installed Option

*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

FAN RPM AT MOTOR PULLEY SETTINGS*

UNIT 48TF	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
004†	1000	976	952	928	904	880	856	832	808	784	760	—	—
004**	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
005†	1185	1150	1115	1080	1045	1010	975	940	905	870	835	—	—
005**	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
006†	1300	1260	1220	1180	1140	1100	1060	1020	980	940	900	—	—
006**	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—
007††	1460	1420	1380	1345	1305	1265	1225	1185	1150	1110	1070	—	—
007**	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—
008††	840	815	790	765	740	715	690	665	635	615	590	—	—
008 ‖	935	910	885	860	835	810	785	760	735	710	685	—	—
008**	1080	1025	1007	988	970	952	933	915	897	878	860	—	—
009††	935	910	885	860	835	810	785	760	735	710	685	—	—
009**	1080	1025	1007	988	970	952	933	915	897	878	860	—	—
012††	935	910	885	860	835	810	785	760	735	710	685	—	—
012†	1085	1060	1035	1010	985	960	935	910	885	860	835	—	—
012**	1130	1112	1087	1062	1037	1012	987	962	937	912	887	862	830
014††	1080	1060	1035	1015	990	970	950	925	905	880	860	—	—
014†	1260	1220	1185	1155	1130	1100	1075	1045	1015	990	960	930	900

*Approximate fan rpm shown.
†Indicates alternate motor and drive package.
**Indicates high-static motor and drive package.
††Indicates standard motor and drive package.
‖ Indicates alternate drive package only.

ALTITUDE COMPENSATION* — 48TF004-007

ELEVATION (ft)	72,000 AND 115,000 BTUH NOMINAL INPUT		150,000 BTUH NOMINAL INPUT	
	Natural Gas Orifice Size†	Liquid Propane Orifice Size†	Natural Gas Orifice Size†	Liquid Propane Orifice Size†
0-2,000	33	43	30	38
2,000	34	43	30	39
3,000	35	44	31	40
4,000	36	44	32	41
5,000	36	44	33	42
6,000	37	45	34	43
7,000	37	45	35	43
8,000	38	46	36	44
9,000	39	47	37	44
10,000	41	48	38	45
11,000	43	48	39	45
12,000	44	49	40	46
13,000	44	49	41	47
14,000	45	50	42	47

*As the height above sea level increases, there is less oxygen per cubic foot of air. Therefore, heat input rate should be reduced at higher altitudes.
†Orifices available through your local Carrier distributor.

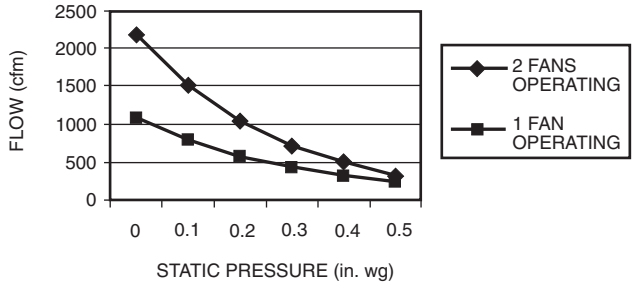
ALTITUDE COMPENSATION* — 48TF008-014

ELEVATION (ft)	125,000,180,000, AND 224,000 BTUH NOMINAL INPUT		250,000 BTUH NOMINAL INPUT	
	Natural Gas Orifice Size†	Liquid Propane Orifice Size†	Natural Gas Orifice Size†	Liquid Propane Orifice Size†
0-2,000	31	41	30	38
2,000	32	42	30	39
3,000	32	42	31	40
4,000	32	42	32	41
5,000	33	43	33	42
6,000	34	43	34	43
7,000	35	44	35	43
8,000	36	44	36	44
9,000	37	45	37	44
10,000	38	46	38	45
11,000	39	47	39	45
12,000	40	47	40	46
13,000	41	48	41	47
14,000	42	48	42	47

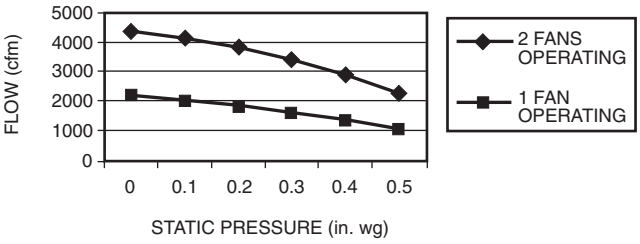
*As the height above sea level increases, there is less oxygen per cubic foot of air. Therefore, heat input rate should be reduced at higher altitudes.
†Orifices available through your local Carrier distributor.

Performance data (cont)

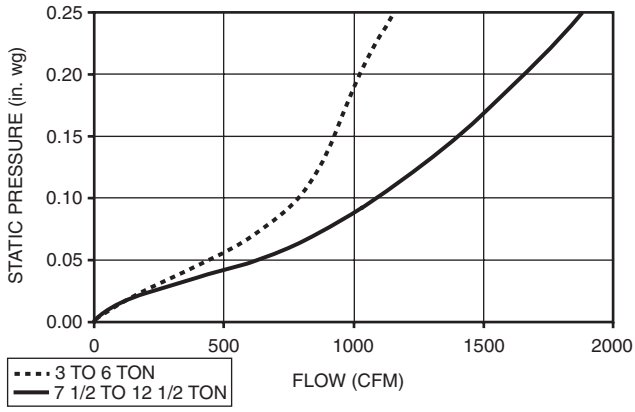
ECONOMI$ER POWER EXHAUST PERFORMANCE (48TF008-014)



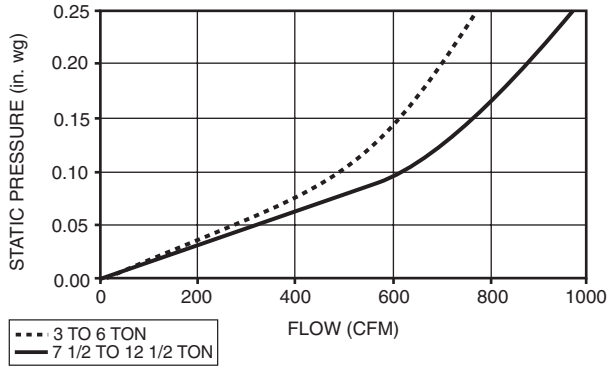
ECONOMI$ER POWER EXHAUST PERFORMANCE (48TF004-007)



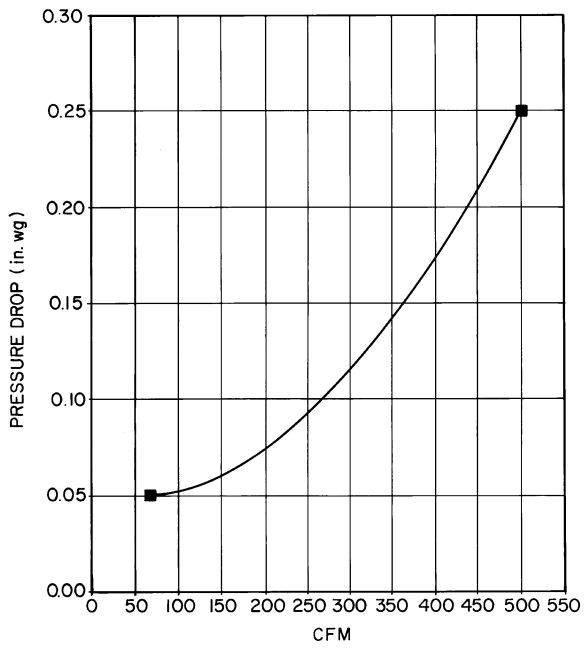
VERTICAL ECONOMI$ER BAROMETRIC RELIEF DAMPER CHARACTERISTICS



HORIZONTAL ECONOMI$ER BAROMETRIC RELIEF DAMPER CHARACTERISTICS



DURABLADE ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTIC — 48TF004-014

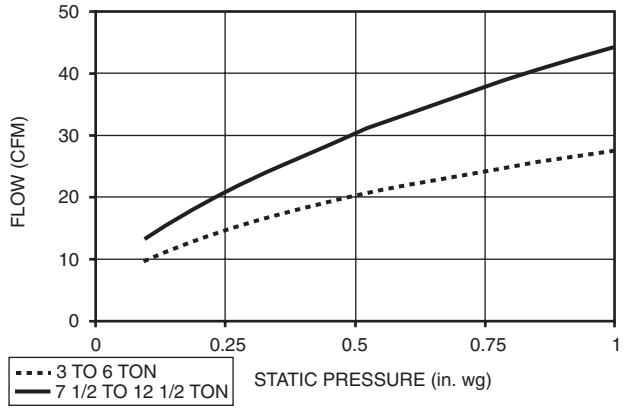


OPTIONAL POWER EXHAUST
POWER REQUIREMENTS

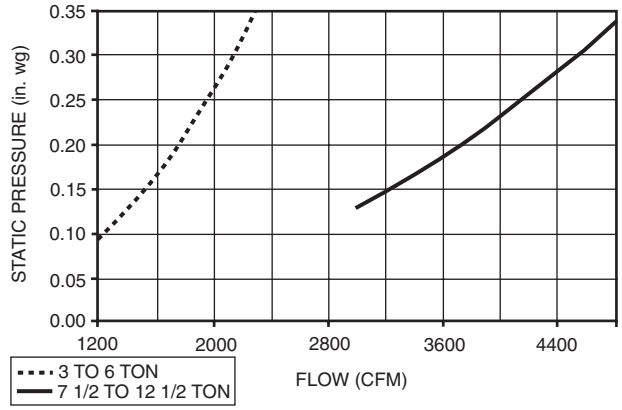
UNIT SIZE	AMPS (2 Fans Running)	MOCP		
		230 VAC	460 VAC	575 VAC
48TF004-007	1.40 Amps @ 60 Hz	15.0 amps	15.0 amps	15.0 amps
48TF008-014	3.04 Amps @ 60 Hz			

MOCP — Maximum Overcurrent Protection

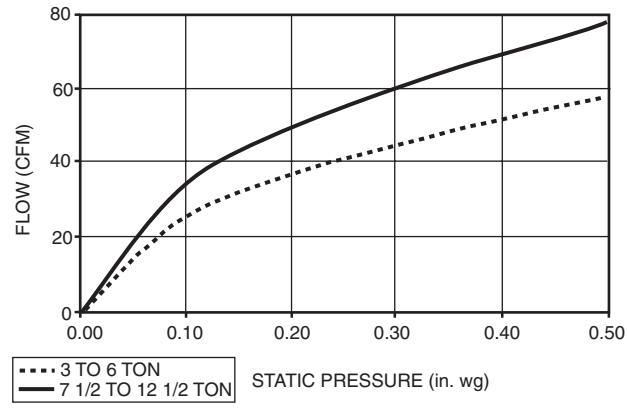
VERTICAL ECONOMI$ER OUTDOOR-AIR LEAKAGE



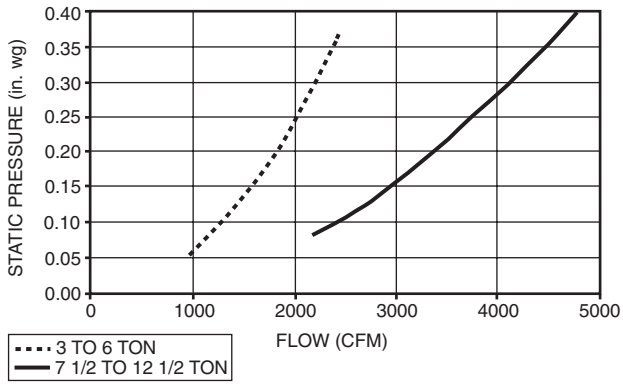
VERTICAL ECONOMI$ER RETURN-AIR PRESSURE DROP



HORIZONTAL ECONOMI$ER OUTDOOR-AIR LEAKAGE



HORIZONTAL ECONOMI$ER RETURN-AIR PRESSURE DROP



Performance data (cont)

EVAPORATOR-FAN MOTOR EFFICIENCY

UNIT 48TF	MOTOR EFFICIENCY (%)
004,005	75
006	74/84*
007	84
008-012	80
014	87

NOTE: All indoor-fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.
*Single phase/three-phase.

ALTITUDE DERATING FACTOR*

ELEVATION (ft)	MAXIMUM HEATING VALUE (Btu/ft^3)
0-2,000	1,100
2,001-3,000	1,050
3,001-4,000	1,000
4,001-5,000	950
5,001-6,000	900

*Derating of the unit is not required unless the heating value of the gas exceeds the values listed in the table above, or if the elevation exceeds 6000 ft. Derating conditions must be 4% per thousand ft above sea level. For example, at 4000 ft, if the heating value of the gas exceeds 1000 Btu/ft^3, the unit will require a 16% derating. For elevations above 6000 ft, the same formula applies. For example, at 7000 ft, the unit will require a 28% derating of the maximum heating value per the National Fuel Gas Code.

EVAPORATOR-FAN MOTOR PERFORMANCE

UNIT 48TF	EVAPORATOR-FAN MOTOR	UNIT VOLTAGE	MAXIMUM ACCEPTABLE CONTINUOUS BHP*	MAXIMUM ACCEPTABLE OPERATING WATTS	MAXIMUM AMP DRAW
004	Standard	208/230	0.34	440	2.8
		460			1.3
		575			1.3
	Alternate	208/230	1.00	1000	4.9
		460			2.1
		575			2.1
	High Static	208/230	2.40	2120	6.0
		460			3.0
		575			3.0
005	Standard	208/230	0.75	850	3.5
		460			1.8
		575			1.8
	Alternate	208/230	1.00	1000	4.9
		460			2.1
		575			2.1
	High Static	208/230	2.40	2120	6.0
		460			3.0
		575			3.0
006	Standard	208/230	1.20	1340	5.9
		460			3.2
		575			3.2
	Alternate	208/230	1.30/2.40†	2120	10.1/6.7†
		460			3.0
		575			3.0
	High Static	208/230	2.90	2562	8.6
		460			3.9
		575			3.9
007	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	2.90	2562	8.6
		460			3.9
		575			3.9
008	Standard, Alternate	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
009	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
012	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	Alternate	208/230	2.90	2615	8.6
		460			3.9
		575			3.9
	High Static	208/230	5.25	4400	17.3
		460			8.5
		575			8.5
014	Standard	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
	Alternate	208/230	5.25	4400	17.3
		460			8.5
		575			8.5

LEGEND
BHP — Brake Horsepower
*Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence. Using your fan motors up to the horsepower ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.
†Single phase/three-phase.

NOTES:
1. All indoor-fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.
2. High-static motor not available on single-phase units.

Electrical data

ELECTRICAL DATA (Without Convenience Outlet)

UNIT 48TF	NOMINAL VOLTAGE	IFM TYPE	VOLTAGE RANGE		COMPR (ea)		OFM (ea)		IFM	COMBUSTION FAN MOTOR FLA	POWER SUPPLY		DISCONNECT SIZE*	
			Min	Max	RLA	LRA	Hp	FLA	FLA		MCA	MOCP†	FLA	LRA
004 (3 Tons)	208/230-1-60	Std	187	254	16.2	96.0	1/4	1.4	3.5	.6	25.2/25.2	30/30	24/24	106/106
		Alt							4.9		26.6/26.6	35/35	26/26	111/111
	208/230-3-60	Std	187	254	10.2	75.0	1/4	1.4	3.5	.6	17.7/17.7	25/25	17/17	85/85
		Alt							4.9		19.1/19.1	25/25	19/19	90/90
		High							5.2		19.4/19.4	25/25	19/19	109/109
	460-3-60	Std	414	508	4.4	40.0	1/4	0.8	1.3	.3	7.6	15	7	44/44
		Alt							2.1		8.4	15	8	48/48
		High							2.6		8.9	15	9	57/57
	575-3-60	Std	518	632	3.7	31.0	1/4	0.8	1.3	.3	6.7	15	7	35
		Alt							2.1		7.5	15	8	39
		High							2.6		8.0	15	8	63
005 (4 Tons)	208/230-1-60	Std	187	254	23.3	118.0	1/4	1.4	3.5	.6	34.0/34.0	40/40	32/32	129/129
		Alt							4.9		35.4/35.4	45/45	34/34	133/133
	208/230-3-60	Std	187	254	15.4	90.0	1/4	1.4	3.5	.6	24.2/24.2	30/30	23/23	101/101
		Alt							4.9		25.6/25.6	30/30	25/25	105/105
		High							5.2		25.9/25.9	30/30	25/25	124/124
	460-3-60	Std	414	508	8.3	45.0	1/4	0.8	1.8	.3	13.0	20	13	51
		Alt							2.1		13.3	20	13	53
		High							2.6		13.8	20	13	62
	575-3-60	Std	518	632	6.4	36.0	1/4	0.8	1.8	.3	10.6	15	10	42
		Alt							2.1		10.9	15	11	44
		High							2.6		11.4	15	11	53
006 (5 Tons)	208/230-1-60	Std	187	254	28.8	147.0	1/4	1.4	5.9	.6	43.3/43.3	60/60	42/42	161/161
		Alt							6.6		44.0/44.0	60/60	42/42	184/184
	208/230-3-60	Std	187	254	16.0	114.0	1/4	1.4	5.9	.6	27.3/27.3	35/35	27/27	128/128
		Alt							5.2		26.6/26.6	35/35	26/26	148/148
		High							7.5		28.9/28.9	35/35	29/29	174/174
	460-3-60	Std	414	508	7.4	64.0	1/4	0.8	3.1	.3	13.2	20	13	72
		Alt							2.6		12.7	15	12	81
		High							3.4		13.5	20	13	93
	575-3-60	Std	518	632	6.2	62.0	1/4	0.8	3.1	.3	11.7	15	12	59
		Alt							3.0		11.2	15	11	69
		High							3.4		12.0	15	12	81
007 (6 Tons)	208/230-3-60	Std	187	254	20.6	146.0	1/4	1.4	5.2	.6	32.4/32.4	40/40	31/31	180/180
		High							7.5		34.7/34.7	40/40	34/32	205/205
	460-3-60	Std	414	508	10.6	73.0	1/4	0.6	2.6	.3	15.4	20	15	90
		High							3.4		16.2	20	16	103
	575-3-60	Std	518	632	8.5	58.4	1/4	0.6	2.6	.3	13.0	15	13	75
		High							3.4		13.8	20	14	88
008 (7 1/2 Tons)	208/230-3-60	Std	187	254	14.0	91.0	1/4	1.4	5.8	.6	40.1/40.1	45/45	42/42	229/229
		Alt							5.8		40.1/40.1	45/45	42/42	229/229
		High							10.6		44.9/44.9	50/50	48/48	273/273
	460-3-60	Std	414	508	6.4	42.0	1/4	0.7	2.6	.3	18.4	25	19	107
		Alt							2.6		18.4	25	19	107
		High							4.8		20.6	25	22	129
	575-3-60	Std	518	632	5.2	39.0	1/4	0.7	2.6	.3	14.9	20	16	97
		Alt							2.6		14.9	20	16	97
		High							4.8		16.7	20	18	114
009 (8 1/2 Tons)	208/230-3-60	Std	187	254	16.0	137.0	1/4	1.4	5.8	.6	44.6/44.6	50/50	47/47	321/321
		High							10.6		49.4/49.4	60/60	52/52	365/365
	460-3-60	Std	414	508	8.3	69.0	1/4	0.7	2.6	.3	22.7	25	24	161
		High							4.8		24.9	30	26	138
	575-3-60	Std	518	632	6.4	58.0	1/4	0.7	2.6	.3	17.6	20	18	135
		High							4.8		19.4	25	20	152

See Legend and Notes on page 58.

Electrical data (cont)

ELECTRICAL DATA (Without Convenience Outlet) (cont)

UNIT 48TF	NOMINAL VOLTAGE	IFM TYPE	VOLTAGE RANGE		COMPR (ea)		OFM (ea)		IFM	COMBUSTION FAN MOTOR FLA	POWER SUPPLY		DISCONNECT SIZE*	
			Min	Max	RLA	LRA	Hp	FLA	FLA		MCA	MOCP†	FLA	LRA
012 (10 Tons)	208/230-3-60	Std	187	254	15.8	130.0	1/4	1.4	5.8	.6	43.1/43.1	50/50	45/45	307/307
		Alt							7.5		44.8/44.8	50/50	47/47	326/326
		High							15.0		52.3/52.3	60/60	56/56	374/374
	460-3-60	Std	414	508	7.9	64.0	1/4	0.7	2.6	.3	21.0	25	22	151
		Alt							3.4		21.8	25	23	191
		High							7.4		25.8	30	27	185
	575-3-60	Std	518	632	6.6	52.0	1/4	0.7	2.6	.3	17.9	20	19	107
		Alt							3.4		18.5	25	19	138
		High							7.4		21.7	25	23	133
014 (12 1/2 Tons)	208/230-3-60	Std	187	254	23.0	146.0	1/4	1.4	10.6	.6	65.2/65.2	80/80**	68/68	383/383
		Alt							15.0		69.6/69.6	80/80**	73/73	406/406
	460-3-60	Std	414	508	10.4	73.0	1/4	0.7	4.8	.3	29.6	40	31	192
		Alt							7.4		32.2	45	34	203
	575-3-60	Std	518	632	8.3	58.4	1/4	0.7	4.8	.3	23.6	30	25	153
		Alt							7.4		25.7	30	27	162

LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
OFM — Outdoor (Condenser) Fan Motor
RLA — Rated Load Amps

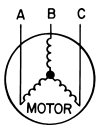
*Used to determine minimum disconnect per NEC.
†Fuse or HACR circuit breaker
**Fuse only.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

   % Voltage Imbalance

   $$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

ELECTRICAL DATA (With Convenience Outlet)

UNIT 48TF	NOMINAL VOLTAGE	IFM TYPE	VOLTAGE RANGE		COMPR (ea)		OFM (ea)		IFM	COMBUSTION FAN MOTOR FLA	POWER SUPPLY		DISCONNECT SIZE*	
			Min	Max	RLA	LRA	Hp	FLA	FLA		MCA	MOCP†	FLA	LRA
004 (3 Tons)	208/230-1-60	Std	187	254	16.2	96.0	1/4	1.4	3.5	.6	31.2/31.2	35/35	30/30	111/111
		Alt							4.9		32.6/32.6	40/35	31/31	116/116
	208/230-3-60	Std	187	254	10.2	75.0	1/4	1.4	3.5	.6	22.5/22.5	30/25	23/23	90/ 90
		Alt							4.9		23.9/23.9	30/30	25/25	95/ 95
		High							5.2		24.2/24.2	30/30	25/25	114/114
	460-3-60	Std	414	508	4.4	40.0	1/4	0.8	1.3	.3	9.8	15	10	47
		Alt							2.1		10.6	15	11	50
		High							2.6		11.1	15	11	59
	575-3-60	Std	518	632	3.7	31.0	1/4	0.8	1.3	.3	8.5	15	9	37
		Alt							2.1		9.3	15	10	40
		High							2.6		9.8	15	10	65
005 (4 Tons)	208/230-1-60	Std	187	254	23.3	118.0	1/4	1.4	3.5	.6	40.0/40.0	45/45	38/38	134/134
		Alt							4.9		41.4/41.4	50/50	40/40	138/138
	208/230-3-60	Std	187	254	15.4	90.0	1/4	1.4	3.5	.6	29.0/29.0	35/35	29/29	106/106
		Alt							4.9		30.4/30.4	35/35	30/30	110/110
		High							5.2		30.7/30.7	35/35	31/31	129/129
	460-3-60	Std	414	508	8.3	45.0	1/4	0.8	1.8	.3	15.2	20	15	53
		Alt							2.1		15.5	20	15	55
		High							2.6		16.0	20	16	64
	575-3-60	Std	518	632	6.4	36.0	1/4	0.8	1.8	.3	12.3	15	12	43
		Alt							2.1		12.6	15	13	45
		High							2.6		13.1	15	13	54
006 (5 Tons)	208/230-1-60	Std	187	254	28.8	147.0	1/4	1.4	5.9	.6	49.3/49.3	60/60	47/47	166/166
		Alt							6.6		50.0/50.0	60/60	48/48	188/188
	208/230-3-60	Std	187	254	16.3	114.0	1/4	1.4	5.9	.6	32.1/32.1	40/40	32/32	133/133
		Alt							5.2		31.4/31/4	40/35	32/32	153/153
		High							7.5		28.9/28.9	35/35	29/29	174/174
	460-3-60	Std	414	508	7.4	64.0	1/4	0.8	3.1	.3	15.3	20	15	74
		Alt							2.6		14.8	20	15	83
		High							3.4		15.6	20	16	96
	575-3-60	Std	518	632	6.2	62.0	1/4	0.8	3.1	.3	13.4	15	14	61
		Alt							3.0		12.9	15	13	70
		High							3.4		13.7	20	14	83
007 (6 Tons)	208/230-3-60	Std	187	254	23.6	146.0	1/4	1.4	5.2	.6	37.2/37.2	45/45	37/37	184/184
		High							7.5		39.5/39.5	45/45	39/39	210/210
	460-3-60	Std	414	508	10.6	73.0	1/4	0.6	2.6	.3	17.6	20	17	92
		High							3.4		18.4	25	18	105
	575-3-60	Std	518	632	8.5	58.4	1/4	0.6	2.6	.3	14.7	20	15	77
		High							3.4		15.5	20	16	90
008 (7 1/2 Tons)	208/230-3-60	Std	187	254	14.0	91.0	1/4	1.4	5.8	.6	46.1/46.1	50/50	48/48	233/233
		Alt							5.8		46.1/46.1	50/50	48/48	233/233
		High							10.6		50.9/50.9	60/60	53/53	277/277
	460-3-60	Std	414	508	6.4	42.0	1/4	0.7	2.6	.3	21.1	25	22	110
		Alt							2.6		21.1	25	22	110
		High							4.8		23.3	25	24	132
	575-3-60	Std	518	632	5.2	39.0	1/4	0.7	2.6	.3	17.6	20	18	99
		Alt							2.6		17.6	20	18	99
		High							4.8		19.4	25	20	117
009 (8 1/2 Tons)	208/230-3-60	Std	187	254	16.0	137.0	1/4	1.4	5.8	.6	50.6/50.6	60/60	52/52	325/325
		High							10.6		55.4/55.4	60/60	58/58	369/369
	460-3-60	Std	414	508	8.3	69.0	1/4	0.7	2.6	.3	25.4	30	26	164
		High							4.8		27.6	30	29	138
	575-3-60	Std	518	632	6.4	58.0	1/4	0.7	2.6	.3	20.3	25	20	137
		High							4.8		22.1	25	22	155

See Legend and Notes on page 60.

Electrical data (cont)

ELECTRICAL DATA (With Convenience Outlet) (cont)

UNIT 48TF	NOMINAL VOLTAGE	IFM TYPE	VOLTAGE RANGE		COMPR (ea)		OFM (ea)		IFM	COMBUSTION FAN MOTOR FLA	POWER SUPPLY		DISCONNECT SIZE*	
			Min	Max	RLA	LRA	Hp	FLA	FLA		MCA	MOCP†	FLA	LRA
012 (10 Tons)	208/230-3-60	Std	187	254	15.8	130.0	1/4	1.4	5.8	.6	49.1/49.1	60/60	50/50	311/311
		Alt							7.5		50.8/50.8	60/60	52/52	330/330
		High							15.0		58.3/58.3	70/70	61/61	378/378
	460-3-60	Std	414	508	7.9	64.0	1/4	0.7	2.6	.3	23.7	30	24	154
		Alt							3.4		24.5	30	25	193
		High							7.4		28.5	30	30	187
	575-3-60	Std	518	632	6.6	52.0	1/4	0.7	2.6	.3	20.6	25	21	109
		Alt							3.4		21.2	25	21	141
		High							7.4		24.4	30	25	136
014 (12 1/2 Tons)	208/230-3-60	Std	187	254	23.0	146.0	1/4	1.4	10.6	.6	71.2/71.2	80/80**	74/74	387/387
		Alt							15.0		75.6/75.6	90/80**	79/79	410/410
	460-3-60	Std	414	508	10.4	73.0	1/4	0.7	4.8	.3	32.3	45	34	194
		Alt							7.4		34.9	45	37	205
	575-3-60	Std	518	632	8.3	58.4	1/4	0.7	4.8	.3	26.3	30	27	156
		Alt							7.4		28.4	30	29	165

LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
OFM — Outdoor (Condenser) Fan Motor
RLA — Rated Load Amps

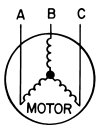
*Used to determine minimum disconnect per NEC.
†Fuse or HACR circuit breaker
**Fuse only.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

   % Voltage Imbalance

   $$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

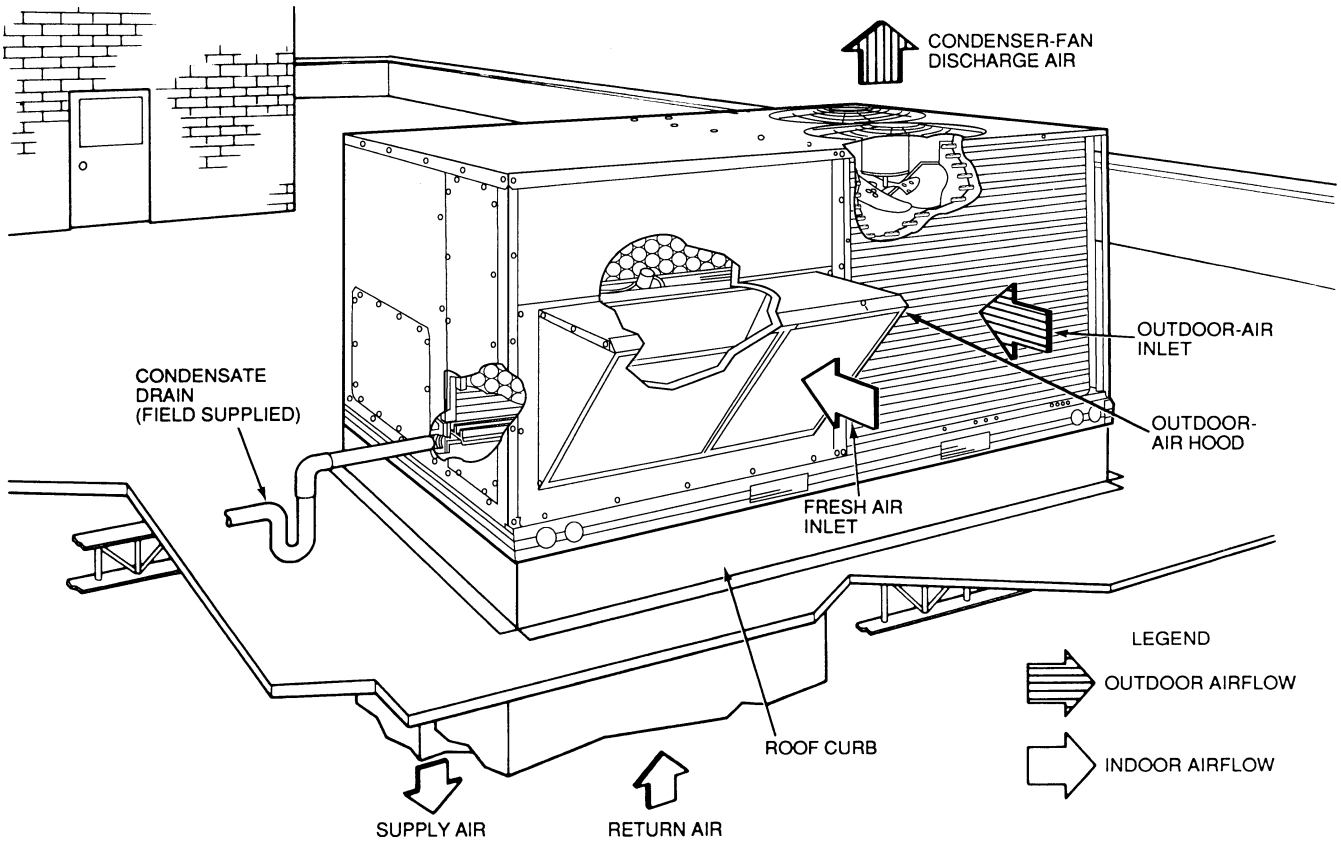
$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

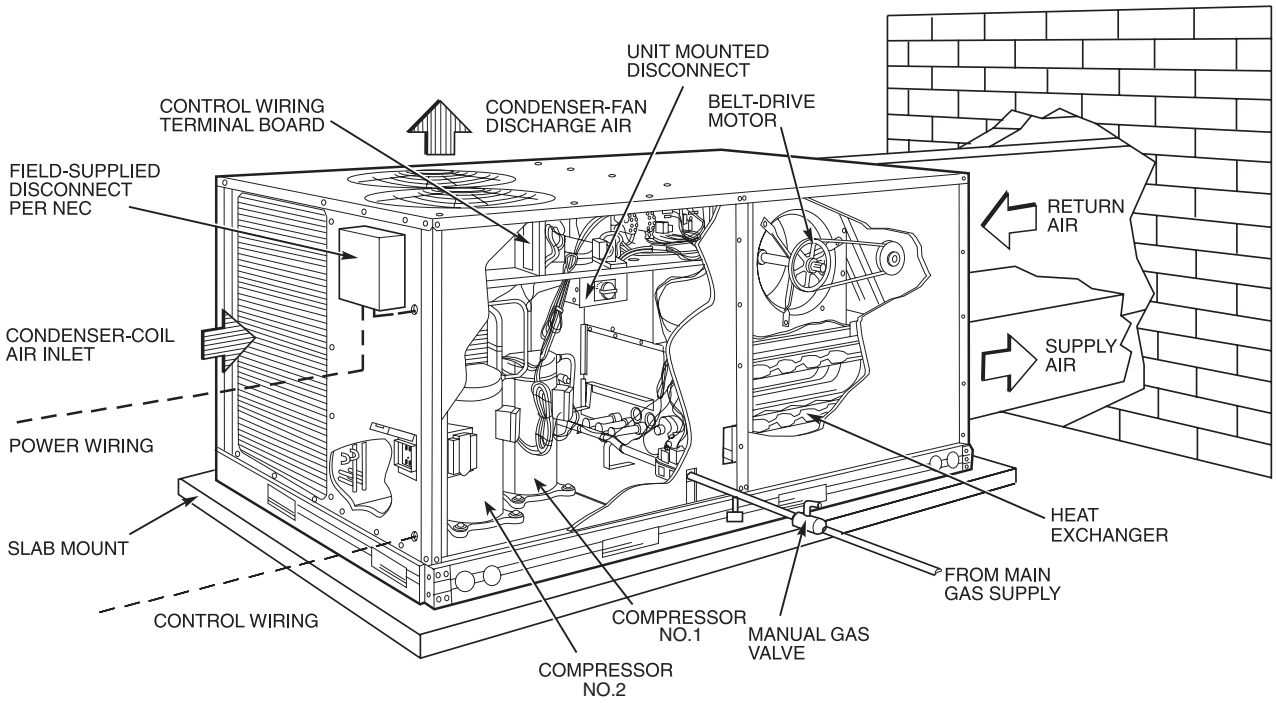
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Typical piping and wiring

VERTICAL DISCHARGE DUCTING



HORIZONTAL DISCHARGE DUCTING



NEC — National Electrical Code

Operating sequence

Cooling, units without economizer — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC) and compressor contactor no. 1 (C1) are energized, and evaporator-fan motor (IFM), compressor no. 1, and condenser fan(s) start. The liquid line solenoid value for compressor no. 1 is deenergized open. The condenser-fan motor(s) runs continuously while unit is cooling. For units with 2 stages of cooling, if the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

Heating, units without economizer — When the thermostat calls for heating, terminal W1 is energized. In order to prevent thermostat short-cycling, the unit is locked into the Heating mode for at least 1 minute when W1 is energized. The induced-draft motor (IDM) is then energized 20 seconds before the burner ignition sequence begins. The indoor (evaporator) fan motor (IFM) is energized 45 seconds after a flame is proven. On units equipped for two stages of heat, when additional heat is needed, W2 is energized and the high-fire solenoid on the main gas valve (MGV) is energized. When the thermostat is satisfied and W1 is deenergized, the IFM stops after a 45-second time-off delay.

Cooling, units with Durablade economizer — When the outdoor-air temperature is above the OAT (outdoor-air thermostat) setting and the room thermostat calls for cooling, compressor contactor no. 1 is energized to start compressor no. 1 and the outdoor (condenser) fan motor (OFM). The indoor (evaporator) fan motor (IFM) is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 will be energized, starting compressor no. 2 (008-014 only). After the thermostat is satisfied, the damper moves to the fully closed position when using an auto fan or to the minimum position when using a continuous fan.

When the outdoor-air temperature is below the OAT setting and the thermostat calls for cooling, the economizer dampers move to the minimum position. If the supply-air temperature is above 57 F, the damper continues to open until it reaches the fully open position or until the supply-air temperature drops below 52 F.

When the supply-air temperature falls to between 57 F and 52 F, the damper will remain at an intermediate open position. If the supply-air temperature falls below 52 F, the damper will modulate closed until it reaches the minimum position or until the supply-air temperature is above 52 F. When the thermostat is satisfied and the indoor-fan motor is still in operation, the damper will move to the minimum open setting. If the thermostat is satisfied and the indoor-fan motor is deenergized, the damper will move to the fully closed position.

If the outdoor air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling, providing second-stage cooling. Compressor no. 1 and the condenser fan will be energized and the position of the economizer damper will be determined by the supply-air temperature. Compressor no. 2 is locked out.

When the second stage of cooling is satisfied, the compressor and OFM will be deenergized. The damper position will be determined by the supply-air temperature.

After a 30-second delay, the IFM shuts off. If the thermostat fan selector switch is in the ON position, the IFM will run continuously.

**Cooling, units with EconoMi$er —** When the outdoor-air temperature (OAT) is above the ECON SP set point and the room thermostat calls for Stage 1 cooling (R to G + Y1), the indoor (evaporator) fan motor (IFM) is energized and the EconoMi$er damper modulates to minimum position. The compressor contactor is energized to start the compressor and outdoor (condenser) fan motor (OFM). After the thermostat is satisfied, the damper modulates to the fully closed position when the IFM is deenergized.

When the OAT is below the ECON SP setting and the room thermostat calls for Stage 1 cooling (R to G + Y1), the EconoMi$er modulates to the minimum position when the IFM is energized. The EconoMi$er provides Stage 1 of cooling by modulating the return and outdoor air dampers to maintain a 55 F supply air set point. If the supply-air temperature (SAT) is greater than 57 F, the EconoMi$er modulates open, allowing a greater amount of outdoor air to enter the unit. If the SAT drops below 53 F, the outdoor air damper modulates closed to reduce the amount of outdoor air. When the SAT is between 53 and 57 F, the EconoMi$er maintains its position.

If outdoor air alone cannot satisfy the cooling requirements of the conditioned space, and the OAT is above the MECH CLG LOCKOUT set point, the EconoMi$er integrates free cooling with mechanical cooling. This is accomplished by the strategies below.

NOTE: Compressor has a 2-minute Minimum On, Minimum Off, and Interstage delay timer.

1. If Y1 is energized, and the room thermostat calls for Y2 (2-stage thermostat), compressor no. 1 and OFM are energized. The EconoMi$er damper is maintained at its current position.
2. If Y1 is energized for more than 20 minutes, and Y2 is not energized (whether or not a 2-stage thermostat is used), compressor no. 1 and OFM are energized. The EconoMi$er damper is maintained at its current position.
3. If Y1 is energized, and compressor no. 1 is already energized (see Step 2) and the room thermostat calls for Y2, the compressor continues to operate. If Y2 remains energized for more than 20 minutes, compressor no. 2 is energized.

NOTE: Compressor no. 2 cannot be energized unless there is a signal for Y2 from the space thermostat.

4. If compressor no. 2 is energized, and the Y2 signal from the thermostat is satisfied, compressors 1 and 2 are deenergized. Reasserting Y2 will start compressor no. 1 and (after a 20-minute interstage delay) compressor no. 2.
5. If compressor no. 1 is energized and the thermostat is satisfied, compressor no. 1, the OFM, and IFM are deenergized and the EconoMi$er modulates closed.

When the OAT is below the MECH CLG LOCKOUT set point, the compressors remain off.

Heating, units with economizer — When the thermostat calls for heating, terminal W1 is energized. In order to prevent thermostat short-cycling, the unit is locked into the Heating mode for at least 1 minute when W1 is energized. The induced-draft motor is then energized and the burner ignition sequence begins. The indoor (evaporator) fan motor (IFM) is energized 45 seconds after a flame is ignited and the damper moves to the minimum position. On units equipped for two stages of heat, when additional heat is needed, W2 is energized and the high-fire solenoid on the main gas valve (MGV) is energized. When the thermostat is satisfied and W1 is deenergized, the IFM stops after a 45-second time-off delay. The economizer damper then moves to the fully closed position. When using continuous fan, the damper will remain in the minimum position.

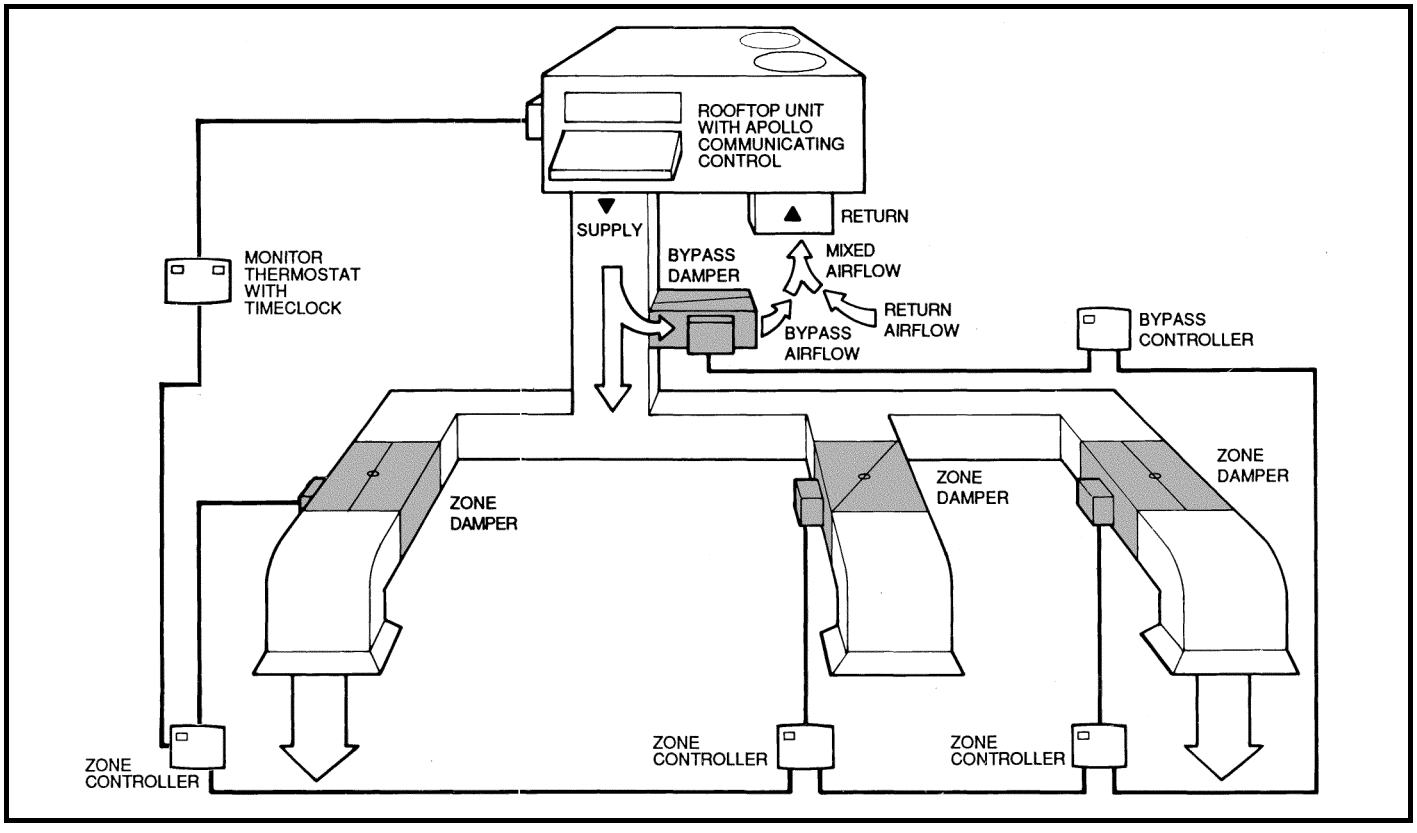
Power exhaust — When the outdoor-air damper is modulated open, the two end switches located in the actuator are tripped. The factory settings are: switch no. 1 will close at 30% outdoor-air; switch no 2 will close at 70% outdoor-air. Both switches are field adjustable. As the outdoor-air damper opens, switch no. 1 closes, energizing a double pole relay that starts fan no. 1. As the outdoor-air damper continues to open, switch no. 2 will close, energizing a double pole relay that starts fan no. 2. When the outdoor-air damper closes to a point below the fan start points (30% fan no. 1, 70% fan no. 2), the respective fan will be deenergized.

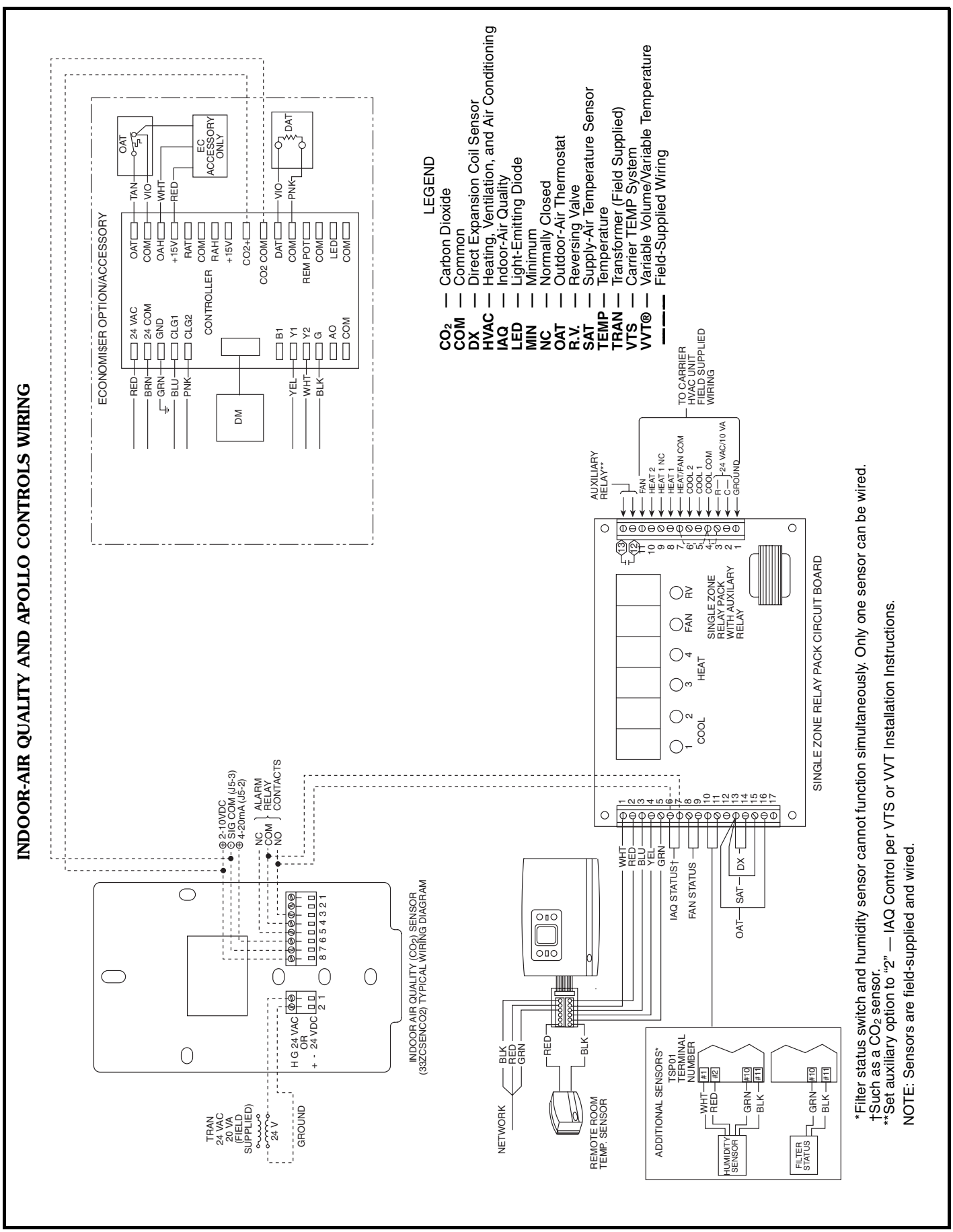
Variable Volume/Variable Temperature (VVT®) Systems

VVT Systems are dedicated to total building comfort. Carrier thermostats, zone dampers, and HVAC equipment with factory-mounted direct digital controls continually monitor and adjust their operation to ensure uninterrupted and personalized comfort for all occupants.

Through the use of communicating electronic controls, VVT Systems are able to provide the comfort of a multiple zone system while using the installation, operating, and maintenance economics of single zone equipment...virtually putting an end to the cost vs. comfort compromise.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.




INDOOR-AIR QUALITY AND APOLLO CONTROLS WIRING
ECONOMI$ER OPTION/ACCESSORY
CONTROLLER
24 VAC
24 COM
GND
CLG1
CLG2
OAT
COM
OAH
+15V
RAT
COM
RAH
+15V
CO2+
CO2 COM
DAT
COM
REM POT
COM
LED
COM
B1
Y1
Y2
G
AO
COM
RED
BRN
GRN
BLU
PNK
YEL
WHT
BLK
TAN
VIO
WHT
RED
VIO
PNK
OAT
EC ACCESSORY ONLY
DAT
DM
LEGEND
CO2 — Carbon Dioxide
COM — Common
DX — Direct Expansion Coil Sensor
HVAC — Heating, Ventilation, and Air Conditioning
IAQ — Indoor-Air Quality
LED — Light-Emitting Diode
MIN — Minimum
NC — Normally Closed
OAT — Outdoor-Air Thermostat
R.V. — Reversing Valve
SAT — Supply-Air Temperature Sensor
TEMP — Temperature
TRAN — Transformer (Field Supplied)
VTS — Carrier TEMP System
VVT® — Variable Volume/Variable Temperature
— — Field-Supplied Wiring
TO CARRIER HVAC UNIT FIELD SUPPLIED WIRING
AUXILIARY RELAY**
FAN
HEAT 2
HEAT 1 NC
HEAT 1
HEAT/FAN COM
COOL 2
COOL 1
COOL COM
R
C
24 VAC/10 VA
GROUND
SINGLE ZONE RELAY PACK CIRCUIT BOARD
COOL
HEAT
FAN
RV
SINGLE ZONE RELAY PACK WITH AUXILIARY RELAY
WHT
RED
BLU
YEL
GRN
IAQ STATUS†
FAN STATUS
OAT
SAT
DX
NETWORK
BLK
RED
GRN
RED
BLK
REMOTE ROOM TEMP. SENSOR
ADDITIONAL SENSORS*
TSP01 TERMINAL NUMBER
#1
#2
#10
#11
WHT
RED
GRN
BLK
HUMIDITY SENSOR
FILTER STATUS
TRAN 24 VAC 20 VA (FIELD SUPPLIED)
24 V
GROUND
H G 24 VAC OR
+ - 24 VDC
2 1
0-10VDC
SIG COM (J5-3)
4-20mA (J5-2)
NC
COM
NO
ALARM RELAY CONTACTS
8 7 6 5 4 3 2 1
INDOOR AIR QUALITY (CO_2) SENSOR
(33ZCSENCO2) TYPICAL WIRING DIAGRAM
*Filter status switch and humidity sensor cannot function simultaneously. Only one sensor can be wired.
†Such as a CO_2 sensor.
**Set auxiliary option to "2" — IAQ Control per VTS or VVT Installation Instructions.
NOTE: Sensors are field-supplied and wired.

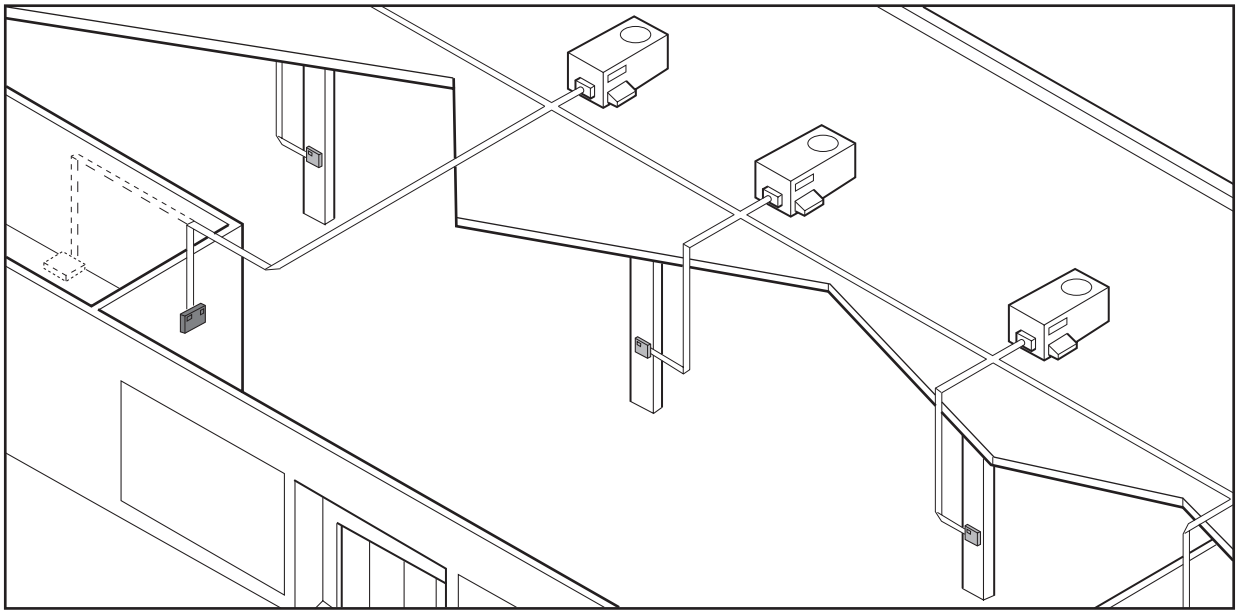
TEMP Systems

A TEMP System is a network of communicating Carrier TEMP System thermostats and rooftop, factory-mounted Apollo direct digital controls, each serving its own zone and heating/cooling unit. Networking allows your building manager to easily access each of your systems from a single location…whether they are in the same building or located throughout town.

The TEMP System's inherently flexible, modular base design supports the ***exact*** number of independent, single zone systems you require…no more, no less, no compromises.

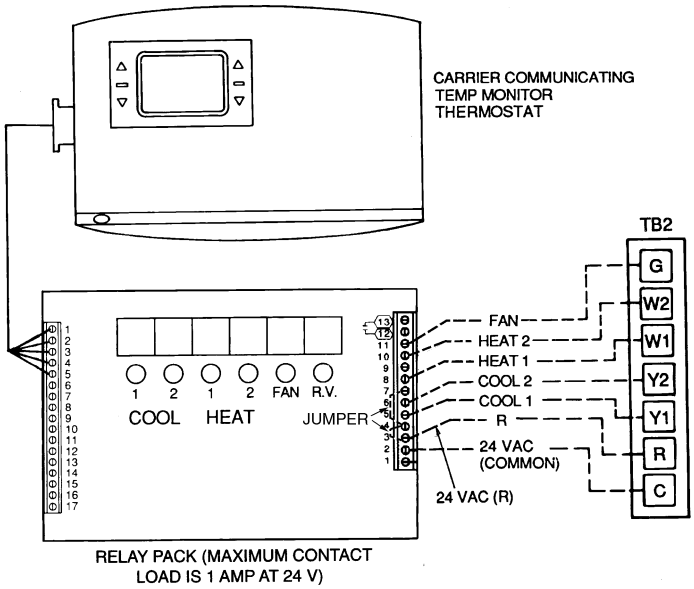
Ideal for department stores, small office buildings, fast food chains, schools, and hotels, a TEMP System is a cost-effective way to maintain comfortable building environments.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.



TEMP SYSTEM THERMOSTAT (WITH TIMECLOCK) TEMP SYSTEM THERMOSTAT (WITHOUT TIMECLOCK)

TYPICAL TEMP SYSTEM FIELD THERMOSTAT WIRING



LEGEND

TB — Terminal Block

▬▬ Field Wiring

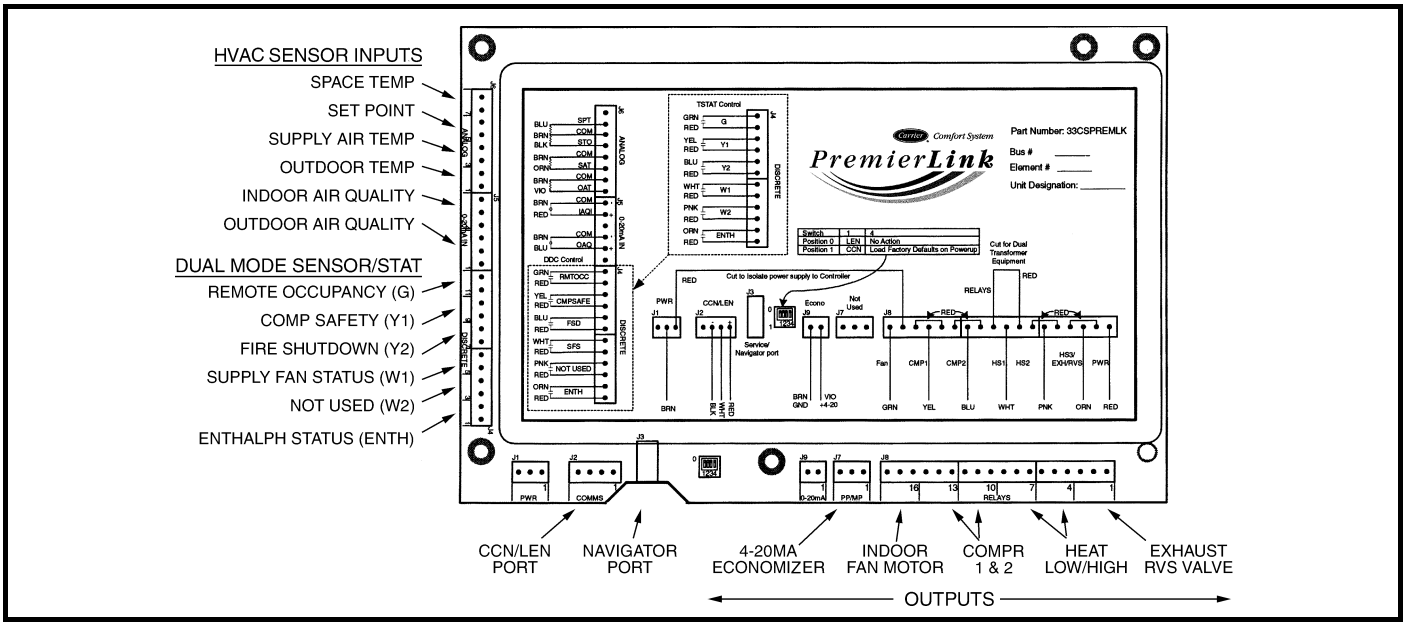
Controls (cont)

PremierLink™ Direct Digital controls — The PremierLink Direct Digital Controls (DDC) requires the use of a Carrier electronic thermostat or a CCN connection for time broadcast to initiate its internal time clock. This is necessary for broadcast of time of day functions (occupied/unoccupied).

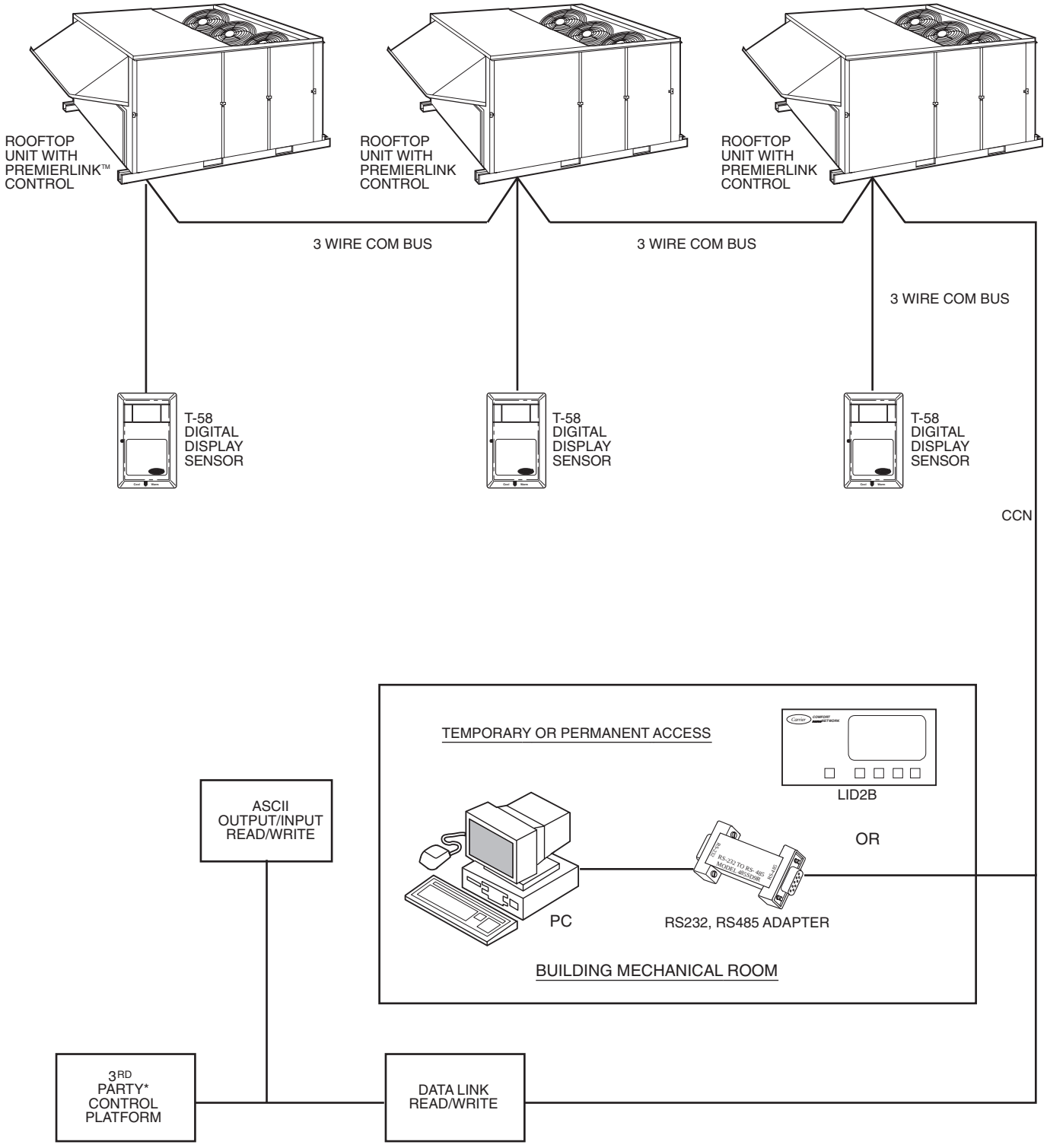
PremierLink Features:

- Equipment Control Functions
  - Cooling Stages
  - Heating Stages
  - Indoor-Fan Motor
  - 4-Way Valve
- Economizer Control Functions
  - Dry Bulb Control
  - Enthalpy Control
  - Differential Enthalpy
  - Power Exhaust
- Advanced Control Functions
  - Smoke Detection
  - Optimal Start (90.1)
  - Unoccupied Free Cool
  - Smart Staging and Optimal Staging
- Network Protocol
  - CCN
  - Internet Ready 38.4 baud rate
- Diagnostics/Advanced Service Features
  - Diagnostics
  - Onboard display
- Scheduling
  - Via Communicating Stat
- User Interface
  - Navigator (LEN protocol)
  - LID2B (CCN)
  - PC w/Carrier software (CCN)

DESCRIPTION	STATUS	UNITS	POINT	LIMITS	ACCESS
Space Temperature	xxx.x	dF	SPT	-40.0 to 245.0 dF	R/W
Supply Air Temperature	xxx.x	dF	SAT	-40.0 to 245.0 dF	R/W
Outside Air Temperature	xxx.x	dF	OAT	-40.0 to 245.0 dF	R/W
Control Setpoint	xxx.x	dF	CLSP		R
Cooling % Total Capacity	xxx	%	CCAP	0 to 100 %	R
Heating % Total Capacity	xxx	%	HCAP	0 to 100 %	R
Economizer Active	No/Yes		ECOS	0 to 1	R
Supply Fan Relay	Off/On		SF	0 to 1	R/W
Supply Fan Status	Off/On		SFS	0 to 1	R
Economizer Position	xxx.x	%	ECONPOS	0.0 to 100.0 %	R/W
Current Min Damper Pos	xxx.x	%	IQMP	0.0 to 100.0 %	R
Filter Status	Clean/Dirty		FLTS	0 to 1	R/W
Remote Occupied Mode	Off/On		RMTOCC	0 to 1	R/W
Heat Stage 1	Off/On		HS1	0 to 1	R
Heat Stage 2	Off/On		HS2	0 to 1	R
Heat 3/Exhaust/Rev Valve	Off/On		H3_EX_RV	0 to 1	R
Enthalpy	Low/High		ENTH	0 to 1	R/W
Indoor Air Quality	xxxx.x		IAQI	0.0 to 5000.0	R/W
Indoor Air Quality Setpt	xxxx.x		IAQS	0.0 to 5000.0	R
Outdoor Air Quality	xxxx.x		OAQ	0.0 to 5000.0	R/W
Fire Shutdown	Normal/Alarm		FSD	0 to 1	R/W
SPT Offset	xx.x	^F	STO	-15.0 to 15.0 ^F	R/W
Compressor 1	Off/On		CMP1	0 to 1	R
Compressor 2	Off/On		CMP2	0 to 1	R
Compressor Safety	Off/On		CMPSAFE	0 to 1	R



TYPICAL CCN/3rd PARTY INTERFACE

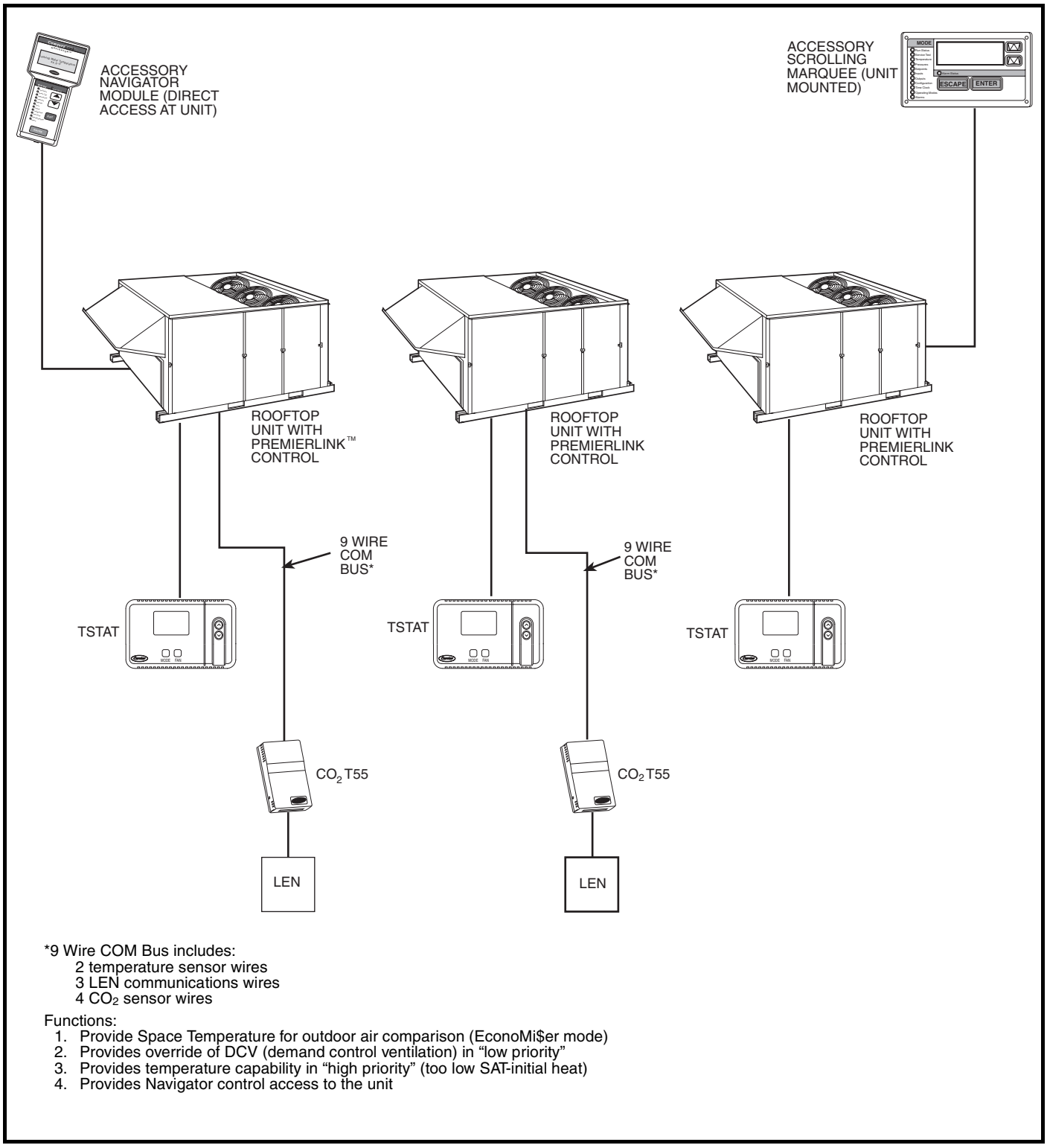


*Example: Metasys, Allerton, ALC, Landis Stafa.

Controls (cont)

Typical LEN (Local Equipment Network) mode

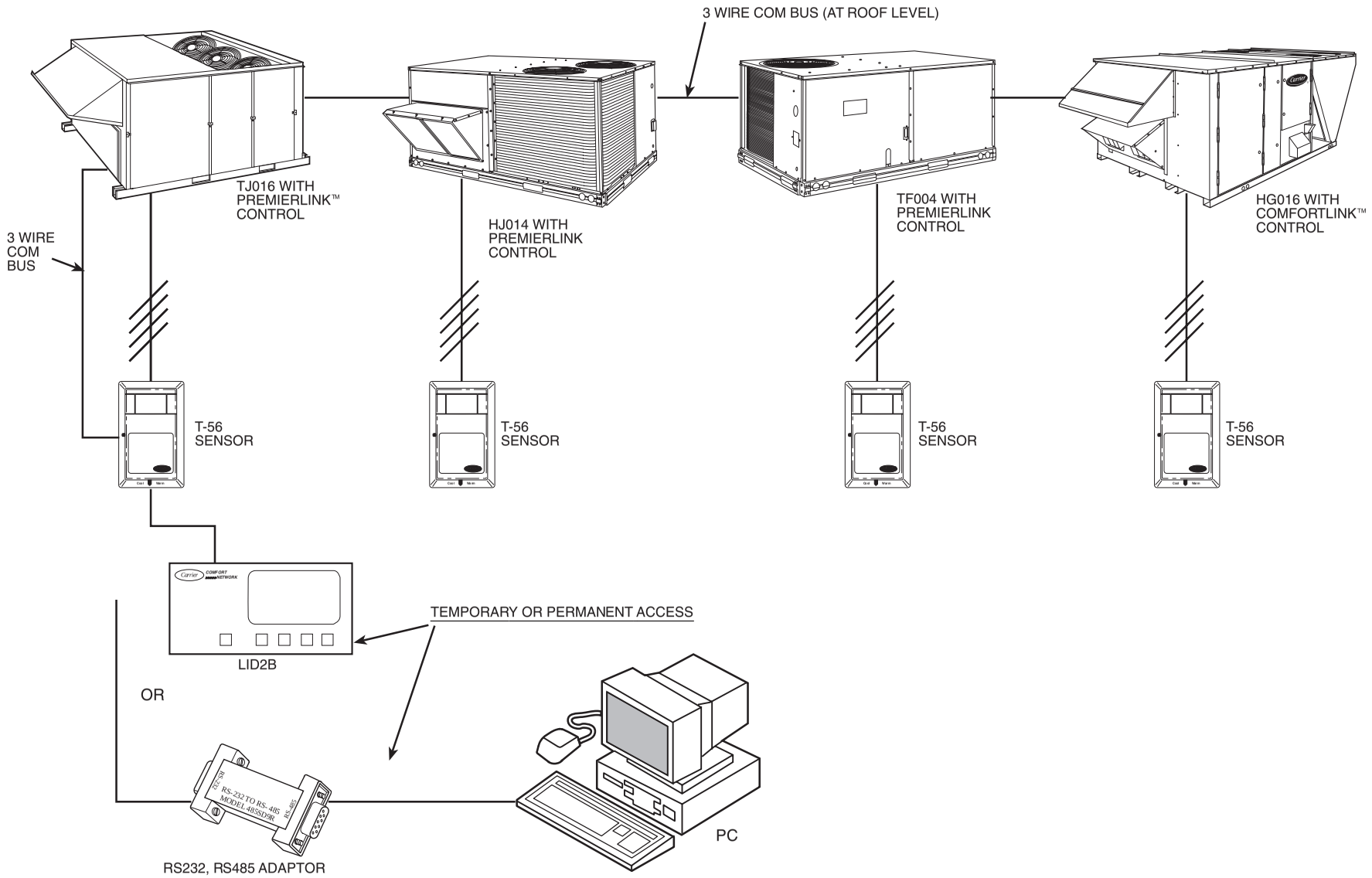
Allows unit software access with Navigator™ or Scrolling Marquee accessories. Both have unit diagnosis and configuration abilities. Thermostat required for stand-alone operation, timeclock required to provide unit schedule (occupied/unoccupied) for sensor applications.



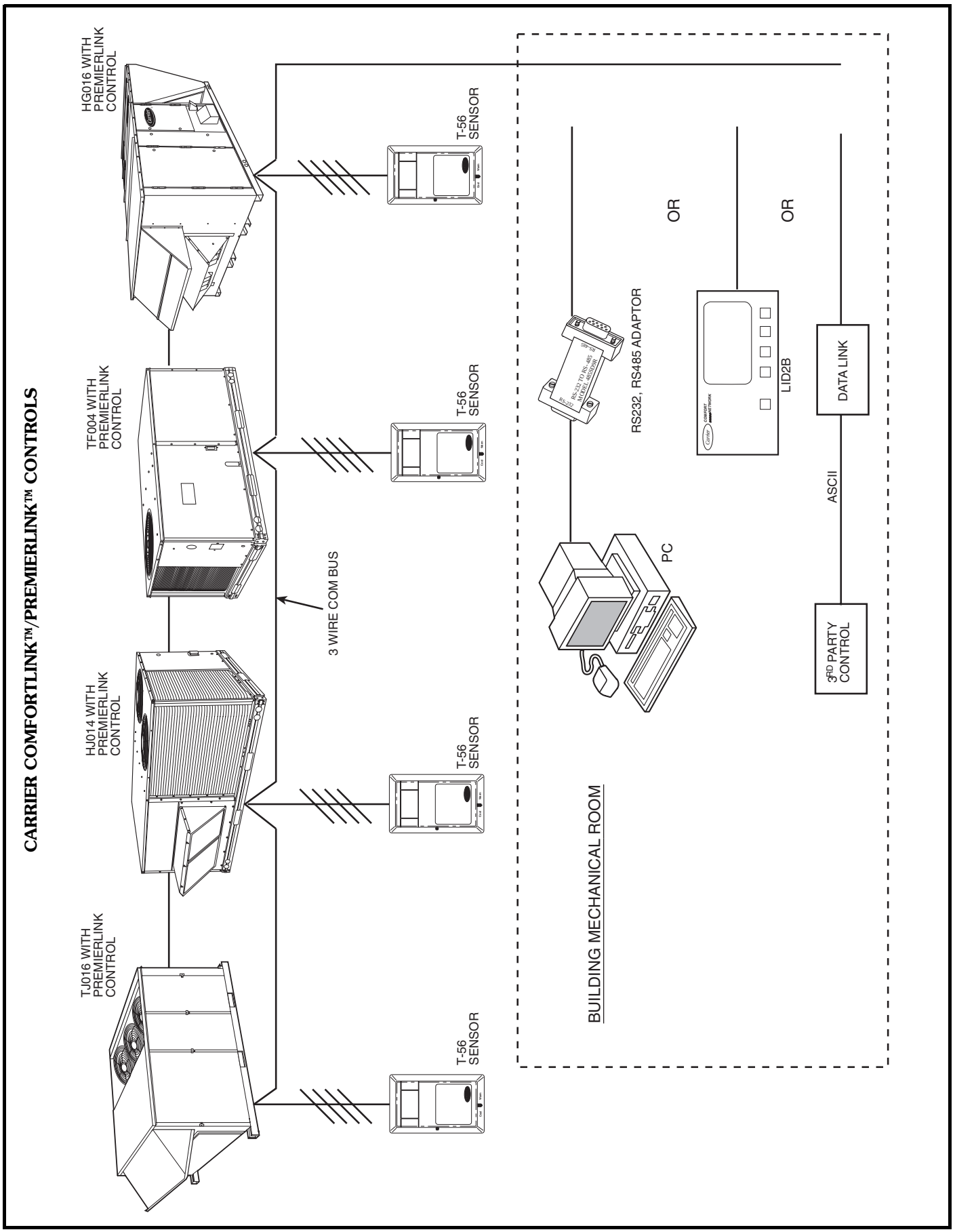
*9 Wire COM Bus includes:
- 2 temperature sensor wires
- 3 LEN communications wires
- 4 CO_2 sensor wires

Functions:
1. Provide Space Temperature for outdoor air comparison (EconoMi$er mode)
2. Provides override of DCV (demand control ventilation) in “low priority”
3. Provides temperature capability in “high priority” (too low SAT-initial heat)
4. Provides Navigator control access to the unit

TYPICAL CCN LOCAL LAN



Controls (cont)



Application data

Ductwork — Secure vertical discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit, or field-supplied flanges can be attached to horizontal discharge openings and all ductwork attached to flanges.

To convert Durablade economizer from vertical discharge to horizontal discharge:

1. Remove economizer to gain access to return duct opening.
2. Move the horizontal discharge duct opening covers to the vertical discharge openings.
3. Rotate economizer 90 degrees (until the economizer motor faces the condenser section).
4. Rotate the barometric relief damper 90 degrees (economizer only).
5. Install block-off plate over the opening on the access panel.

Thru-the-bottom utility connections — An accessory kit is required for proper installation of thru-the-bottom connections.

Thermostat — Use of 2-stage cooling thermostat is recommended for all units. A 2-stage cooling thermostat is required on units with accessory economizer to provide integrated cooling.

Heating-to-cooling changeover — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.

Airflow — Units are draw-thru on cooling and blow-thru on heating.

**Horizontal EconoMi$er —** A field-installed accessory for horizontal discharge applications. Field-installed power exhaust accessory also available for vertical or horizontal EconoMi$er applications.

Power Exhaust — The power exhaust system is an accessory for the EconoMi$er system. It consists of a separate exhaust hood and a two-stage fan system.

Maximum airflow — To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed 500 cfm/ton.

Minimum airflow — The minimum airflow for cooling is 300 cfm/ton.

Minimum ambient cooling operation temperature — The cooling temperature for size 004-014 standard units is 25 F. With accessory Motormaster® IV control and field-supplied wind baffles, units can operate at outdoor temperatures down to –20 F.

Maximum operating outdoor-air temperature — For cooling, this temperature is 115 F.

High altitude — A change to the gas orifice may be required at high altitudes. Refer to Altitude Compensation charts on page 53.

Minimum temperature — Air entering the heat exchanger in heating must be a minimum of 50 F continuous and 45 F intermittent.

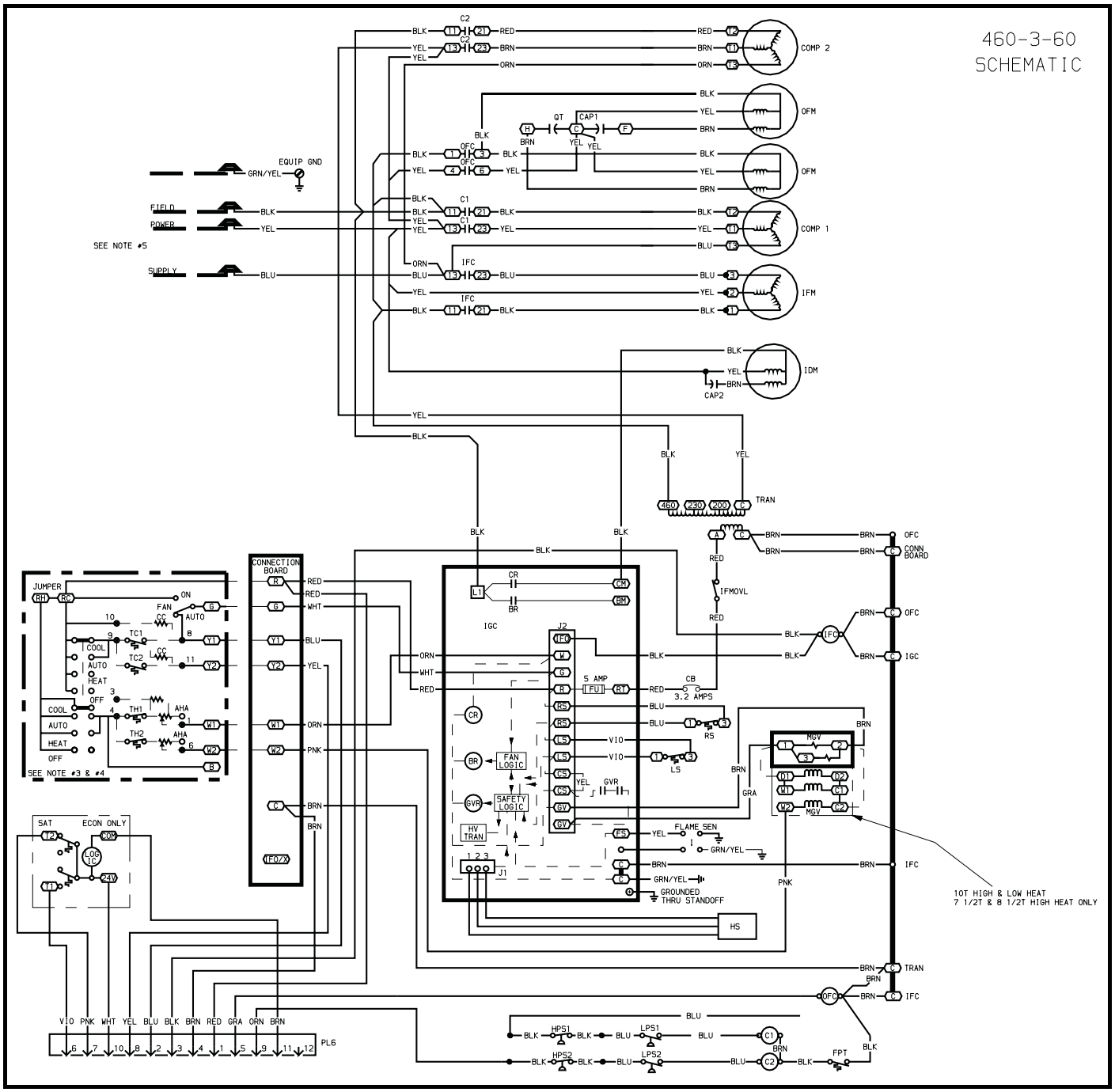
Internal unit design — Due to Carrier's internal unit design (draw-thru over the motor), air path, and specially designed motors, the full horsepower (maximum continuous bhp) listed in the Physical Data table and the notes following each Fan Performance table can be utilized with extreme confidence.

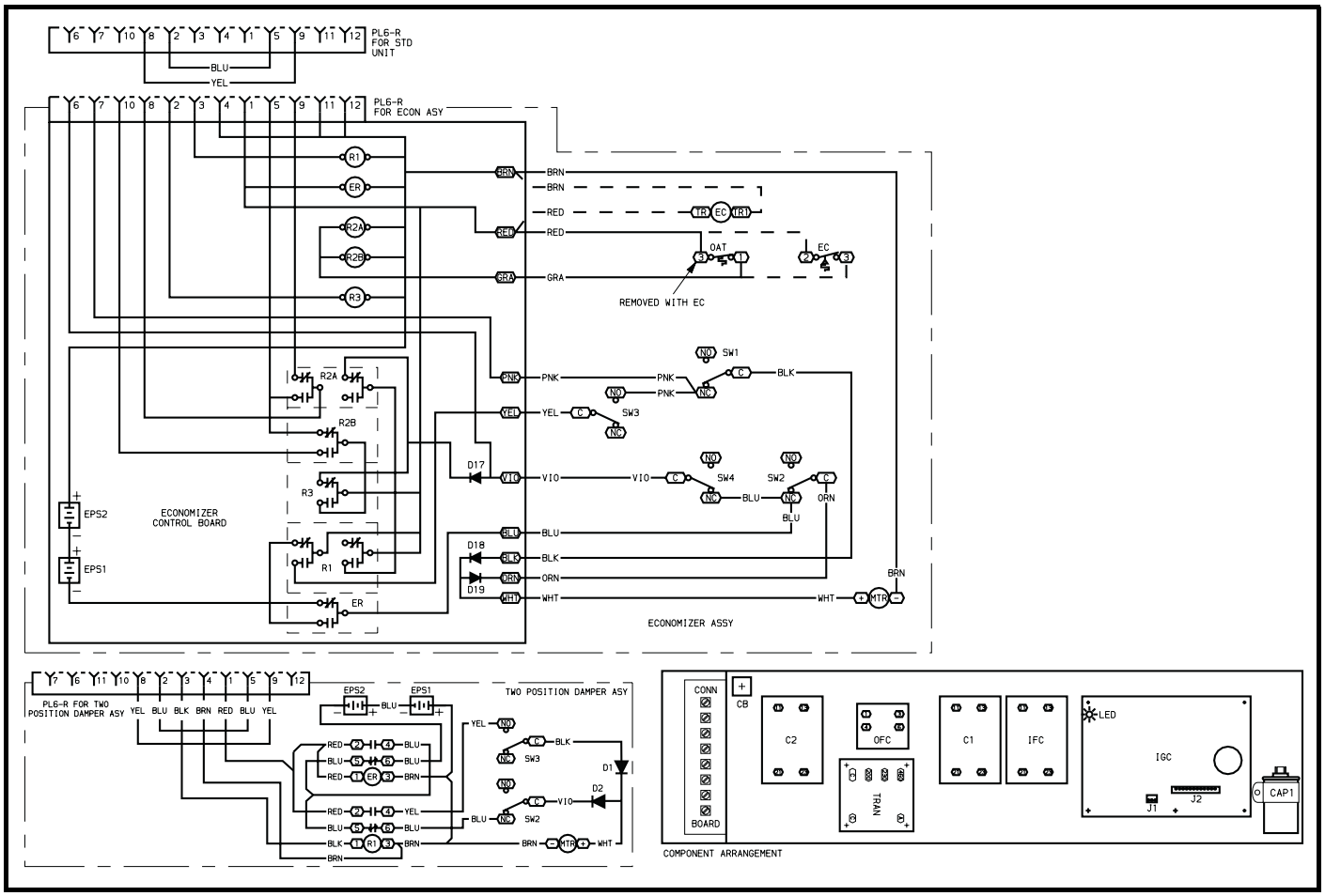
Using Carrier motors with the values listed in the Physical and Fan Performance Data tables *will not* result in nuisance tripping or premature motor failure. The unit warranty will not be affected.

Apollo direct digital communicating controls — The Apollo direct digital controls must be used with either a Carrier master or monitor thermostat.

Carrier PremierLink™ Controls — The Carrier PremierLink Controls can be used with any thermostat.

Typical wiring schematic



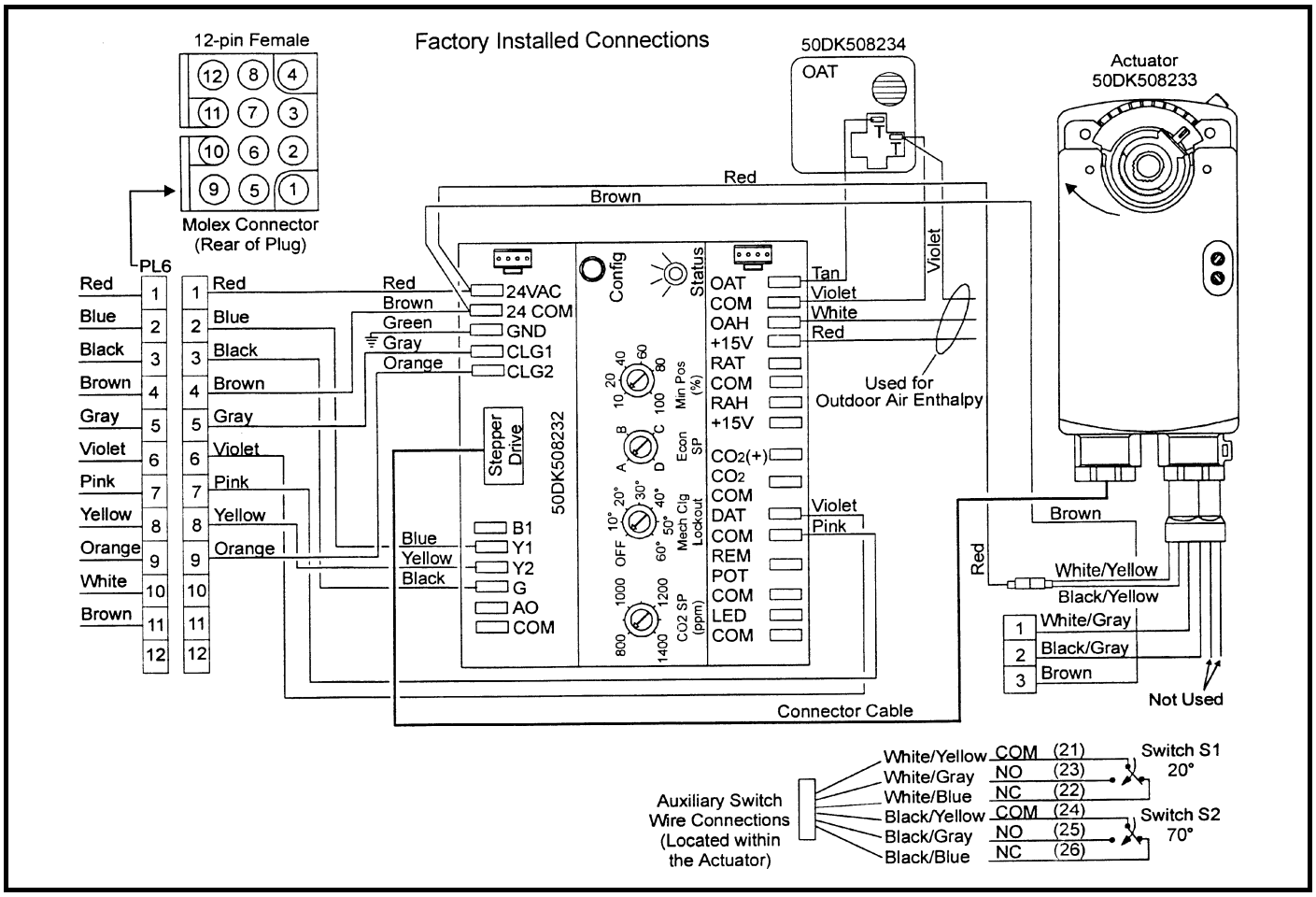


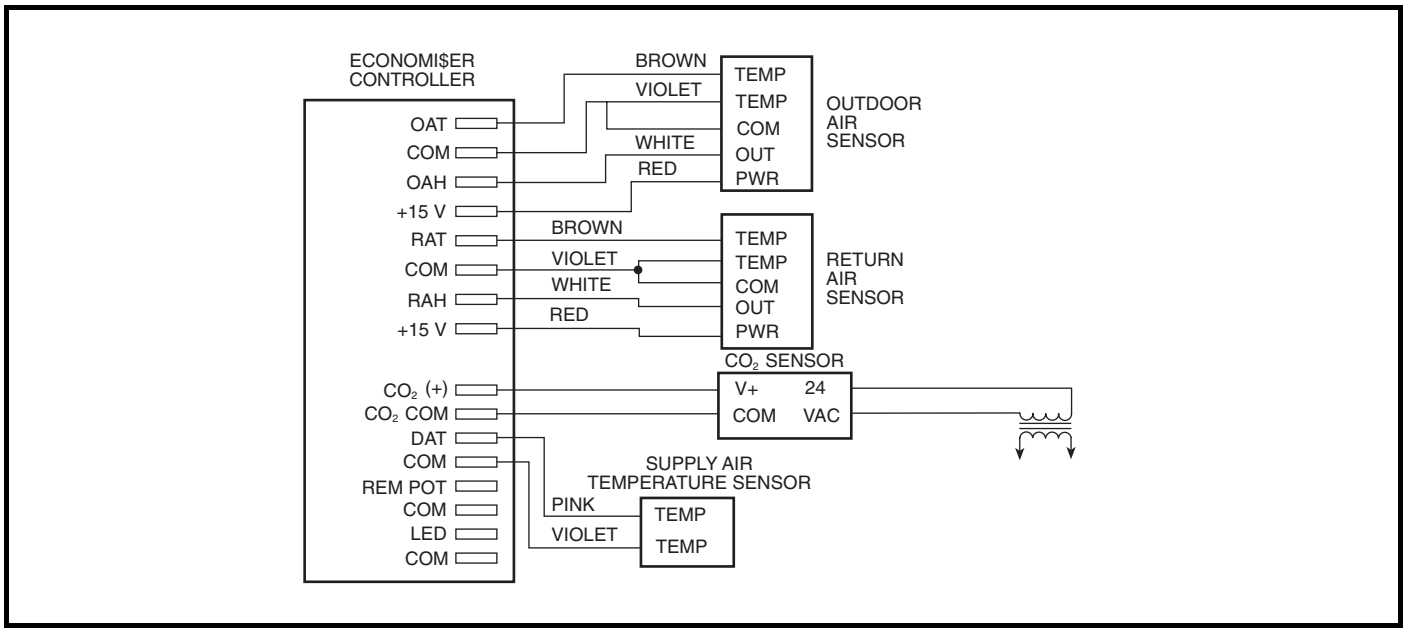
LEGEND FOR TYPICAL WIRING SCHEMATIC

AHA — Adjustable Heat Anticipator
C — Contactor, Compressor
CAP — Capacitor
CB — Circuit Breaker
CC — Cooling Compensator
COMP — Compressor Motor
D — Diode
EC — Enthalpy Control
ECON — Economizer
EPS — Emergency Power Supply (9-Volt Battery)
EQUIP — Equipment
ER — Economizer Relay
FPT — Freeze-Protection Thermostat
FU — Fuse
GND — Ground
GVR — Gas Valve Relay
HPS — High-Pressure Switch
HS — Hall Effect Sensor
HV — High Voltage
I — Ignitor
IDM — Induced-Draft Motor
IFC — Indoor (Evaporator) Fan Contactor
IFM — Indoor (Evaporator) Fan Motor
IGC — Integrated Gas Unit Controller
LPS — Low-Pressure Switch/Loss-of-Charge
LS — Limit Switch
MGV — Main Gas Valve
MTR — Motor
NC — Normally Closed
NO — Normally Open
OAT — Outdoor-Air Thermostat
OFC — Outdoor (Condenser) Fan Contactor
OFM — Outdoor (Condenser) Fan Relay
PL — Plug Assembly
QT — Quadruple Terminal
R — Relay
RS — Rollout Switch
SAT — Supply-Air Thermostat
SEN — Sensor
SW — Switch
SW1 — Switch Fully Open
SW2 — Switch Fully Closed
SW3 — Switch Minimum Vent Position
SW4 — Switch Maximum Vent Position
TC — Thermostat, Cooling
TH — Thermostat, Heating
TRAN — Transformer

Field Splice
Marked Wire
Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Splice
Splice (Marked)
Factory Wiring
Field Control Wiring
Field Power Wiring
Accessory or Optional Wiring
To indicate common potential only. Not to represent wiring.

Typical wiring schematic (cont)





Guide specifications

Packaged Rooftop Electric Cooling Unit with Gas Heat — Constant Volume Application

HVAC Guide Specifications

Size Range: **3 to 12 1/2 Tons, Nominal (Cooling)**
60,000 to 250,000 Btuh, Nominal (Input Heating)

Carrier Model Numbers: **48TFD/L, 48TFE/M, 48TFF/N**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor rooftop mounted, electrically controlled heating and cooling unit utilizing a hermetic compressor(s) for cooling duty and gas combustion for heating duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.

1.02 QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240 or 360 and 270. Designed in accordance with UL Standard 1995.

B. Unit shall be designed to conform to ASHRAE 15, latest revision.

C. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.

D. Roof curb shall be designed to conform to NRCA Standards.

E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

F. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).

G. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered to ISO 9002/BS5750, Part 2.

H. Each 48TF unit is subjected to completely automated run testing on the assembly line. Each unit contains a factory-supplied printout indicating tested pressures, amperages, data, and inspectors; providing certification of the unit status at the time of manufacture.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

Factory assembled, single-piece heating and cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
2. Evaporator fan compartment interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, flexible fiberglass insulation, coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
3. Cabinet panels shall be easily removable for servicing.
4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
5. Unit shall have a factory-installed, sloped condensate drain pan made of a non-corrosive material, providing a minimum 5/8-in. connection with both vertical and horizontal drains, and shall comply with ASHRAE Standard 62.
6. Unit shall have a factory-installed filter access panel to provide filter access with tool-less removal.
7. Unit shall have standard thru-the-bottom gas and power connection capability (accessory kit is required).

C. Fans:

1. Evaporator Fan:
   a. Fan shall be direct or belt driven as shown on the equipment drawings. Belt drive shall include an adjustable-pitch motor pulley.
   b. Fan wheel shall be double-inlet type with forward-curved blades.
   c. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.
2. Evaporator fan shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.
3. Condenser fan shall be of the direct-driven propeller type and shall discharge air vertically.
4. Condenser fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.
5. Induced-draft blower shall be of the direct-driven, single inlet, forward-curved centrifugal type, made from steel with a corrosion-resistant finish and shall be dynamically balanced.

D. Compressor(s):

1. Fully hermetic type, internally protected.
2. Factory mounted on rubber grommets and internally spring mounted for vibration isolation.
3. On independent circuits (008-014).

Guide specifications (cont)

E. Coils:
   1. Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to copper tubes with all joints brazed.
   2. Tube sheet openings shall be belled to prevent tube wear.
   3. Evaporator coil shall be of the full face active design (004-007) or face-split design (008-014) which proves effective in removing additional moisture from the supply air.

F. Heating Section:
   1. Induced-draft combustion type with energy saving direct-spark ignition system and redundant main gas valve.
   2. The heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gage steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
   3. Burners shall be of the in-shot type constructed of aluminum-coated steel.
   4. All gas piping shall enter the unit cabinet at a single location.
   5. The integrated gas controller (IGC) board shall include gas heat operation fault notification using an LED (light-emitting diode).
   6. Unit shall be equipped with anti-cycle protection with one short cycle on unit flame rollout switch or 4 continuous short cycles on the high-temperature limit switch. Fault indication shall be made using an LED.
   7. The IGC board shall contain algorithms that modify evaporator-fan operation to prevent future cycling on high-temperature limit switch.
   8. The LED shall be visible without removal of control box access panel.

G. Refrigerant Components:

   Refrigerant circuit components shall include:
   1. Fixed orifice metering system.
   2. Refrigerant filter drier.
   3. Service gage connections on suction, discharge, and liquid lines.

H. Filter Section:
   1. Standard filter section shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
   2. Filter face velocity shall not exceed 320 fpm at nominal airflows.
   3. Filter section should use only one size filter.
   4. Filters shall be accessible through an access panel with “no-tool” removal.

I. Controls and Safeties:
   1. Unit Controls:

      Unit shall be complete with self-contained low-voltage control circuit protected by an auto-reset device.
   2. Refrigerant Controls:

      Unit shall contain high-pressure, loss-of-charge and freeze protection switches.
   3. Safeties:
      a. Unit shall incorporate compressor overtemperature and overcurrent safety devices to shut off compressor.
      b. Heating section shall be provided with the following minimum protections:
         1) High-temperature limit switch.
         2) Induced-draft motor speed sensor.
         3) Flame rollout switch.
         4) Flame proving controls.

J. Operating Characteristics:
   1. Unit shall be capable of starting and running at 115 F ambient outdoor temperature, meeting maximum load criteria of ARI Standard 210/240 or 360.
   2. Compressor with standard controls shall be capable of operation down to 25 F ambient outdoor temperature.

K. Electrical Requirements:

   All unit power wiring shall enter unit cabinet at a single factory-predrilled location.

L. Motors:
   1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.
   2. Evaporator-fan motor shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
   3. Totally enclosed condenser-fan motor shall have permanently lubricated bearings, and inherent automatic-reset thermal overload protection.
   4. Induced-draft motor shall have permanently lubricated sealed bearings and inherent automatic-reset thermal overload protection.

M. Special Features:

   Certain features are not applicable when the features designated * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

* 1. Carrier PremierLink™ Controls:
      a. Shall be available as a factory-installed or as a field-installed accessory.
      b. Shall work with CCN and ComfortVIEW™ software.

c. Shall be compatible with *Comfort*Link™ controllers.

d. Shall be ASHRAE 62-99 compliant.

e. Shall accept a CO_2 sensor in the conditioned space — Demand Control Ventilation (DCV) Ready.

f. Shall have baud communication rate of 38.4K or faster.

g. Shall be Internet Ready.

h. Shall include an integrated economizer controller.

2. Apollo Control:

a. Shall serve as interface between thermostat, Carrier rooftop unit, and any external field-supplied sensors.

b. Shall be powered by 24 vac/10 va, supplies thermostat with 10 vdc. This power is supplied by the Carrier rooftop unit, and is factory wired.

3. Roof Curbs (Horizontal and Vertical):

a. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.

b. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.

* 4. Integrated Economizers:

a. Integrated integral modulating type capable of simultaneous economizer and compressor operation.

b. Includes all hardware and controls to provide cooling with outdoor air.

c. Equipped with low-leakage dampers, not to exceed 3% leakage at 1 in. wg pressure differential (Durablade economizer only).

d. Capable of introducing up to 100% outdoor air.

e. EconoMi$er shall be equipped with a barometric relief damper with up to 100% of return air (004-007) or 90% of return air (008-014) relief. The Durablade economizer is equipped with 30% of return-air relief (004-014).

f. Designed to close damper during loss-of-power situations with emergency power supply (Durablade economizer) or spring return built into motor (EconoMi$er).

g. Dry bulb outdoor-air temperature sensor shall be provided as standard. Enthalpy control shall be provided as an option.

h. Durablade economizer is a guillotine-style damper, and the EconoMi$er is a gear-driven parallel blade design.

i. EconoMi$er shall provide control of internal building pressure through its accessory two-stage power exhaust function.

j. EconoMi$er shall be capable of exhausting up to 100% outdoor air.

NOTE: EconoMi$er is available with field-installed power exhaust accessory for vertical or horizontal ductwork applications.

* 5. Manual Outdoor-Air Damper:

Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 50% outdoor air for year-round ventilation.

* 6. 100% Two-Position Damper:

a. Two-position damper package shall include single blade damper and motor. Admits up to 100% outdoor air.

b. Damper shall close upon indoor (evaporator) fan shutoff.

c. Designed to close damper during loss of power situations.

d. Equipped with 15% barometric relief damper.

* 7. 25% Two-Position Damper:

a. Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air.

b. Damper shall close upon indoor (evaporator) fan shutoff.

* 8. Head Pressure Control Package:

Consists of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to –20 F by condenser-fan speed modulation or condenser-fan cycling.

9. LP (Liquid Propane) Conversion Kit:

Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane.

* 10. Electronic Programmable Thermostat:

Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Capable of working with Carrier direct digital controls.

11. Light Commercial Thermidistat:

Shall regulate temperature and humidity from one location. Automatic humidity control adjusts indoor humidity based on the outdoor temperature sensor.

* 12. Flue Shield:

Provides protection from the hot sides of the gas flue hood.

* 13. Thermostat and Subbase:

Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.

Guide specifications (cont)

* 14. Condenser Coil Hail Guard Assembly:

Hail guard shall protect against damage from hail and flying debris.

15. Unit-Mounted, Non-Fused Disconnect Switch:

Shall be factory-installed, internally mounted. NEC and UL approved non-fused switch shall provide unit power shutoff. Shall be accessible from outside the unit and shall provide power off lockout capability.

16. Convenience Outlet:

Shall be factory-installed and internally-mounted with easily accessible 115-v female receptacle. Shall include 15 amp GFI receptacle with independent fuse protection. Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer. Shall be accessible from outside the unit.

17. Alternate Motor(s) and/or Drive(s) (004-006, 008, 012, 014):

Alternate motor(s) and drive(s) shall be factory-installed to provide additional performance range.

18. High-Static Motor(s) and Drive(s) (004-012):

High-static motor(s) and drive(s) shall be factory-installed to provide additional performance range.

19. Flue Discharge Deflector:

Flue discharge deflector directs unit exhaust vertically instead of horizontally.

20. Condenser Coil Grille:

The grille protects the condenser coil from damage by large objects without increasing unit clearances.

21. Compressor Cycle Delay:

Unit shall be prevented from restarting for minimum of 5 min. after shutdown.

22. Thru-the-Bottom Utility Connectors:

Kit shall provide connectors to permit gas and electrical connections to be brought to the unit through the basepan.

23. Fan/Filter Status Switch:

Provides status of indoor (evaporator) fan (ON/OFF) or filter (CLEAN/DIRTY). Status shall be displayed over communication bus when used with direct digital controls or with an indicator light at the thermostat.

24. Energy$Recycler:

The package shall be an outdoor rooftop or surface mounted, electronically controlled, air-to-air heat pump unit utilizing a hermetic compressor for cooling and heating duty.

The Energy$Recycler shall recover energy from building exhaust air and pre-condition ventilation air to allow higher ventilation requirements and minimizing energy cost.

25. EconoMi$er and Power Exhaust:

Package shall provide control of internal building pressure. The two-stage system shall exhaust up to 100% of return air (vertical only).

26. Two-Stage Power Exhaust Accessory for EconoMi$er:

Power exhaust shall be used in conjunction with EconoMi$er to provide system exhaust of up to 100% of return air. The power exhaust is a field-installed accessory (vertical and horizontal applications).

The individual fans are energized through the end switches located in the actuator, which will open as the outdoor-air damper opens. These end switches are factory set for 30 and 70% of outdoor-air, and can be set to meet specific job requirements.

27. Outdoor Air Enthalpy Sensor:

The outdoor air enthalpy sensor shall be used with the EconoMi$er device to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control. The sensor allows the EconoMi$er controller to determine if outside air is suitable for free cooling.

28. Return Air Enthalpy Sensor:

The return air enthalpy sensor shall be used with the EconoMi$er device. When used in conjunction with an outdoor air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control.

29. Return Air Temperature Sensor:

The return air temperature sensor shall be used with the EconoMi$er device. When used in conjunction with the standard outdoor air temperature sensor, the EconoMi$er device will provide differential temperature control.

30. Indoor Air Quality (CO_2) Sensor:

a. Shall have the ability to provide demand ventilation indoor air quality (IAQ) control through the economizer with an IAQ sensor.

b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display. The set point shall have adjustment capability.

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